
FINAL
Archaeological Inventory Survey Report for the
Nāwiliwili-Ahukini Bike Path Project
Nāwiliwili, Kalapakī, and Hanamā‘ulu Ahupua‘a
Līhu‘e District, Kaua‘i Island
TMK: [4] 3-5-01:4, 8, 27, 60, 83, 85, 102, 118, 128, 159, and
160 por.and various rights-of-way between various plats

Prepared for
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(Job Code: NAWILIWILI 4)

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Management Summary

Reference	Archaeological Inventory Survey Report for the Nāwiliwili-Ahukini Bike Path Project, Nāwiliwili, Kalapakī and Hanamā'ulu Ahupua'a, Līhu'e District, Kaua'i Island, TMK: [4] 3-5-01:4, 8, 27, 60, 83, 85, 102, 118, 128, 159, and 160 por. and various rights-of-way between various plats (Altizer and Hammatt 2010).
Date	April 2010
Project Number	Cultural Surveys Hawai'i (CSH) Job Code: NAWILIWILI 4
Investigation Permit Number	This archaeological inventory survey was conducted under archaeological permit numbers 09-20 and 10-10 issued by the Hawai'i State Historic Preservation Division (SHPD), Department of Land and Natural Resources (DLNR), per Hawai'i Administrative Rules (HAR) Chapter 13-282.
Project Location	The project area addressed in this archaeological inventory survey report is located in coastal and near coastal portions of three <i>ahupua'a</i> in Līhu'e District, Island of Kaua'i: Hanamā'ulu, Kalapakī and Nāwiliwili. The proposed bike and pedestrian path route alignments are located near, and adjacent to, Ahukini Landing, Nāwiliwili Harbor Light, Līhu'e Airport, Kaua'i Lagoons and Marriottt Resort, Nāwiliwili Park and Harbor, and Niumalu Park. This area is depicted on portions of the 1996 Līhu'e and 1996 Kapa'a U.S. Geological Survey 7.5-minute topographic quadrangle maps.
Land Jurisdiction	Public and private land
Agencies	SHPD/DLNR
Project Description	The current project is one phase of a larger project to connect Nāwiliwili with Anahola by a bike and pedestrian path. This portion of the current project area will link Nāwiliwili, Ahukini Landing, Nāwiliwili Harbor Light, Līhu'e Airport, Kaua'i Lagoons and Marriottt Resort, Nāwiliwili Park and Harbor, and Niumalu Park.
Size of the Project Area	Approximately 6 linear miles (10 km) of bike and pedestrian path routes are included in the alignment options for the current phase of this project; design and widths of the various alignment options vary.
Area of Potential Effect (APE)	The Area of Potential Effect (APE) for the archaeological inventory survey consists of two alignment-option corridors linking Ahukini Landing, Nāwiliwili Harbor Light, Līhu'e Airport, Kaua'i Lagoons and Marriottt Resort. The APE for this inventory survey includes all lands in the vicinity of both alignment options from the western shoulder of the <i>mauka</i> corridor east to the ocean.

<p>Historic Preservation Regulatory Context</p>	<p>This document was prepared to support the proposed project’s historic preservation review under Hawai‘i Revised Statutes (HRS) Chapter 6E-8 and Hawai‘i Administrative Rules (HAR) Chapter 13-13-275. In consultation with SHPD, this inventory survey investigation was designed to fulfill the state requirements for archaeological inventory surveys (HAR Chapter 13-276).</p>
<p>Fieldwork Effort</p>	<p>The fieldwork component of this archaeological inventory survey was carried out by CSH archaeologists Gerald K. Ida, B.A., Nancine ‘Missy’ Kamai, B.A., Kaipō Akana, and Kendy Altizer, B.A. Fieldwork was conducted intermittently between May 21, 2009 and February 16, 2010, under the general supervision of Hallett H. Hammatt, Ph.D. (principal investigator).The field work required approximately 29 person-days to complete.</p>
<p>Number of Historic Properties Identified</p>	<p>A total of 15 historic properties were identified as a result of the inventory survey. Sites documented include 2 walls related to plantation era sugar cane cultivation and/or ranching activities (Site 50-30-11-422 [CSH 1] and Site 50-30-11-423 [CSH 2]); 2 pre-contact habitation terraces (Site 50-30-11-2086 [CSH 3] and Site 50-30-11-2094 [CSH 12]); Nāwiliwili Harbor Light and associated features (Site 50-30-11-2087 [CSH 5]); the remains of a historic communications tower (Site 50-30-11-2088 [CSH 6]; a possible burial mound (Site 50-30-11-2089 [CSH 7]); a military gun emplacement (Site 50-30-11-2090 [CSH 8]); 2 sites related to historic residences (Site 50-30-11-2091 [CSH 9] and Site 50-30-11-2092 [CSH 10]); 1 plantation era earthen drainage ditch (Site 50-30-11-2093 [CSH 11]); 1 pre-contact activity area (Site 50-30-11-2095 [CSH 13]); 2 historic concrete drainage ditches (Site 50-30-11-2096 [CSH 14] and Site 50-30-11-2097 [CSH 15]); and, remnants of a historic industrial complex (Site 50-30-11-2103 [CSH 16]).</p>

<p>Historic Properties Recommended Eligible to the Hawai'i Register of Historic Places (Hawai'i Register)¹</p>	<p>A total of 9 sites are recommended eligible for the Hawai'i Register:</p> <p>Site 50-30-11-2086 (CSH 3), a habitation terrace, recommended eligible under Criteria D and E.</p> <p>Site 50-30-11-2087 (CSH 5), Nāwiliwili Harbor Light and associated features, recommended eligible under Criteria C, D, and E.</p> <p>Site 50-30-11-2088 (CSH 6), foundation of a historic communications tower, recommended eligible under Criterion D.</p> <p>Site 50-30-11-2089 (CSH 7), possible historic burial mound, recommended eligible under Criteria D and E.</p> <p>Site 50-30-11-2090 (CSH 8), historic artillery gun emplacement, recommended eligible under Criterion D.</p> <p>Site 50-30-11-2092 (CSH 10), historic outhouse and cesspool, recommended eligible under Criterion D.</p> <p>Site 50-30-11-2094 (CSH 12), a habitation terrace, recommended eligible under Criteria D and E.</p> <p>Site 50-30-11-2095 (CSH 13), pre-contact activity area, recommended eligible under Criteria D and E.</p> <p>Site 50-30-11-2103 (CSH 16), historic industrial complex; recommended eligible under Criterion D.</p>
<p>Historic Properties Recommended Ineligible to the Hawai'i Register</p>	<p>Site 50-30-11-422 (CSH 1), plantation era agricultural field divider</p> <p>Site 50-30-11-423 (CSH 2), plantation era agricultural field divider</p> <p>Site 50-30-11-2091 (CSH 9), historic building foundation</p> <p>Site 50-30-11-2093 (CSH 11), plantation era drainage ditch</p> <p>Site 50-30-11-2096 (CSH 14), historic drainage ditch</p> <p>Site 50-30-11-2097 (CSH 15), historic drainage ditch</p>
<p>Effect Recommendation</p>	<p>The archaeological inventory survey investigation identified 15 historic properties within the project area. Of these historic properties, nine are recommended eligible for the Hawai'i State Register, and may potentially be affected by the proposed project.</p> <p>CSH's project specific effect recommendation is "effect, with agreed upon mitigation measures." The recommended mitigation measures will reduce the project's potentially adverse effect on these significant historic properties.</p>

<p>Mitigation Recommendation</p>	<p>The following recommended significant historic properties will potentially be adversely affected by the proposed project. The recommended mitigation measures listed below are intended to alleviate this adverse effect. The scope and methods for these mitigation measures should be developed in consultation with SHPD/DLNR.</p> <p>Site 50-30-11-2086 (CSH 3), a pre-contact habitation terrace; preservation, educational signage, avoid with a 20-ft. buffer.</p> <p>Site 50-30-11-2087 (CSH 5), Nāwiliwili Harbor Light and associated features; preservation in the form of adaptive re-use and educational signage.</p> <p>Site 50-30-11-2088 (CSH 6), foundation of a historic communications tower, no further work.</p> <p>Site 50-30-11-2089 (CSH 7), possible historic burial mound; preservation, avoid with a 50-ft buffer, archaeological testing before construction begins.</p> <p>Site 50-30-11-2090 (CSH 8), historic artillery gun placement; preservation, avoid with a 20-ft buffer and educational signage.</p> <p>Site 50-30-11-2092 (CSH 10), historic outhouse and cesspool; no further work.</p> <p>Site 50-30-11-2094 CSH 12), a pre-contact habitation terrace; preservation, educational signage, avoid with a 20-ft. buffer.</p> <p>Site 50-30-11-2095 (CSH 13), a pre-contact activity area; no further work.</p> <p>Site 50-30-11-2103 (CSH 16), a historic industrial complex; educational signage.</p> <p>Of the nine sites recommended eligible to the Hawai'i Register of Historic Places, six are recommended for preservation, and no further work is recommended for the three remaining sites. Site 50-30-2089 will be addressed by a Data Recovery Program, in compliance with HAR 13-13-278, prior to commencement of construction activities. This program will consist of a Data Recovery Plan, appropriate fieldwork, and a Data Recovery Report. Should human remains be identified, they will be considered previously identified and SHPD and the Kaua'i Island Burial Council will be consulted for the appropriate treatment, per HRS 13-300-31. A Preservation Plan is recommended to address the remaining four sites that are recommended for preservation, in compliance with HAR 13-13-277.</p>
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¹ To be considered eligible for listing on the Hawai'i Register a cultural resource must possess integrity of location, design, setting, materials, workmanship, feeling, and association, and meet one or more of the following broad cultural/historic significance criteria: "A" associated with events that have made an important contribution to the broad patterns of our history; "B" associated with the lives of persons important in our past; "C" embodies the distinctive characteristics of a type, period, or method of construction, represents the work of a master, or possesses high artistic value; "D" have yielded, or is likely to yield information important for research on prehistory or history; and, "E" have an important value to the native Hawaiian people or to another ethnic group of the state due to associations with cultural practices once carried out, or still carried out, at the property, or due to associations with traditional beliefs, events or oral history accounts – these associations being important to the group's history

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Section 1 Introduction

At the request of R.M. Towill Corporation, Cultural Surveys Hawai‘i, Inc. (CSH) conducted an archaeological inventory survey of portions of the Nāwiliwili-Ahukini Bike Path Project, which is located in coastal and near coastal portions of three *ahupua‘a* in Līhu‘e District, Kaua‘i: Hanamā‘ulu, Kalapakī and Nāwiliwili. The proposed bike and pedestrian path route alignments are located near, and adjacent to, Ahukini Landing, Nāwiliwili Harbor Light, Līhu‘e Airport, Kaua‘i Lagoons and Marriottt Resort. This area is depicted on portions of the 1996 Līhu‘e and 1996 Kapa‘a U.S. Geological Survey 7.5-minute topographic quadrangle maps, a tax map, and an aerial photo (Figure 1, Figure 2, and Figure 3).

The current project area is one phase of a larger project to connect Nāwiliwili with Anahola by a bike and pedestrian path, a distance of some 17 miles (27.4 km) of coastline along windward Kaua‘i. This phase of the project links three main sub-areas at the southern end of the overall project corridor: Nāwiliwili, Ahukini Landing, and the Līhu‘e Airport.

Approximately 6 miles (10 km) of bike and pedestrian path routes are included in the current alignment options discussed in this report. Design specifications and widths of the different alignment options vary. Though the *makai* alignment option is the preferred option, the Area of Potential Effect (APE) for this archaeological inventory survey consists of both alignment-option corridors linking Ahukini Landing, Nāwiliwili Harbor Light, Līhu‘e Airport, Kaua‘i Lagoons and Marriottt Resort. The APE also includes all lands in the vicinity of these alignment options from the western shoulder of the *mauka* corridor east to the ocean. Pedestrian survey consisting of 100% coverage at 5-10 m intervals was conducted within this APE.

Under Hawai‘i state historic preservation legislation, archaeological inventory surveys are designed to identify, document, and provide significance and mitigation recommendations for historic properties. Under this legislation, historic properties are defined as any “building, structure, object, district, area, or site, including *heiau* and underwater site, which is over fifty years old.” A project’s effect and potential mitigation measures are evaluated based on the project’s potential impact to “significant” historic properties (those historic properties determined eligible, based on established significance criteria, for inclusion in the Hawai‘i Register of Historic Places [Hawai‘i Register]). Determinations of eligibility to the Hawai‘i Register result when a state agency official’s historic property “significance assessment” is approved by the State Historic Preservation Division/Department of Land and Natural Resources (SHPD/DLNR), or when SHPD/DLNR itself makes an eligibility determination for an historic property (HAR Chapter 13-284).

In consultation with SHPD, this inventory survey investigation was designed to fulfill the state requirements for archaeological inventory surveys (HAR Chapter 13-276).

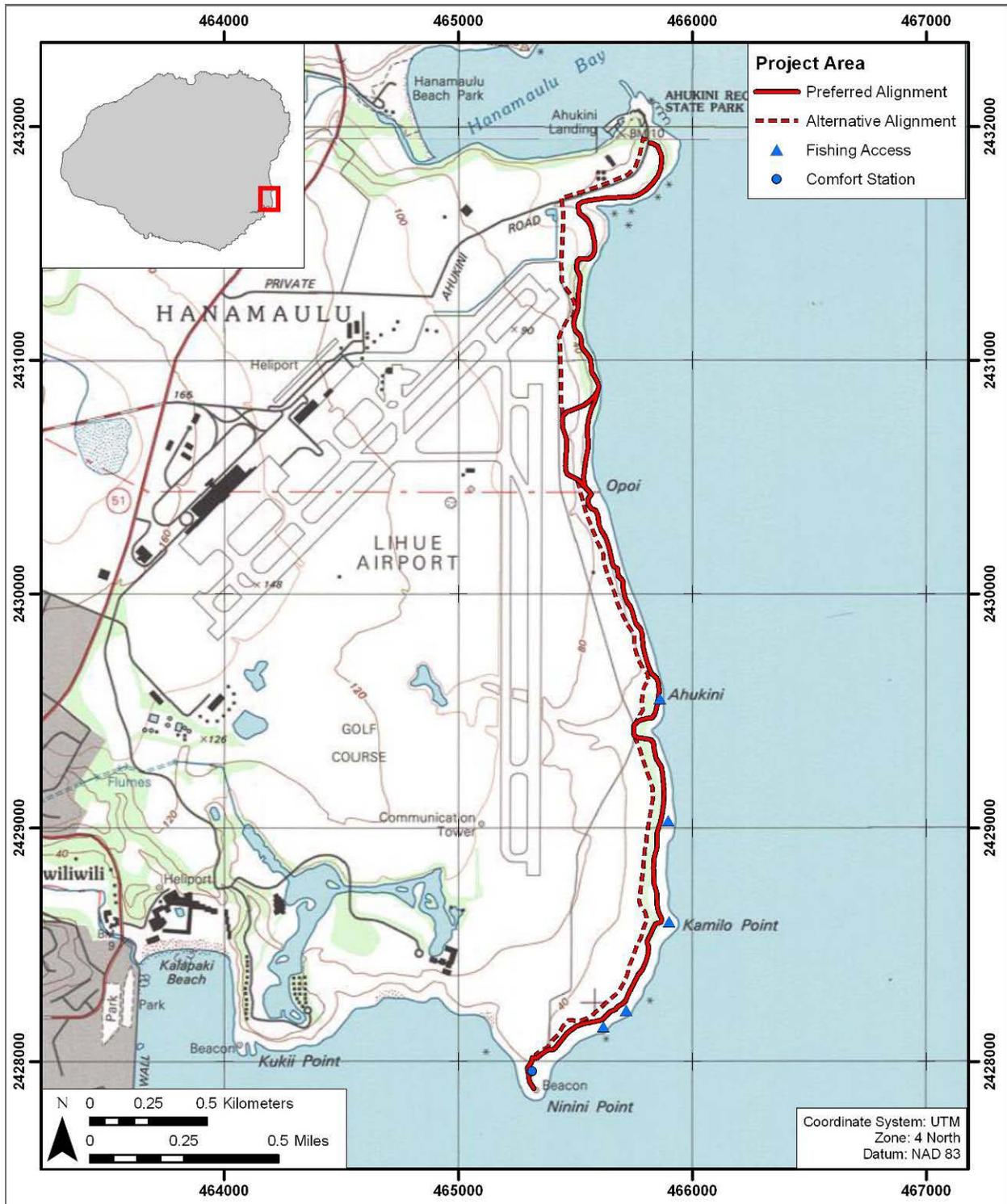


Figure 1. Project area location shown on portions of the U.S. Geological Survey 1996 Līhu‘e and 1996 Kapa‘a quadrangles 7.5-minute topographic map; red line depicts all proposed alignments

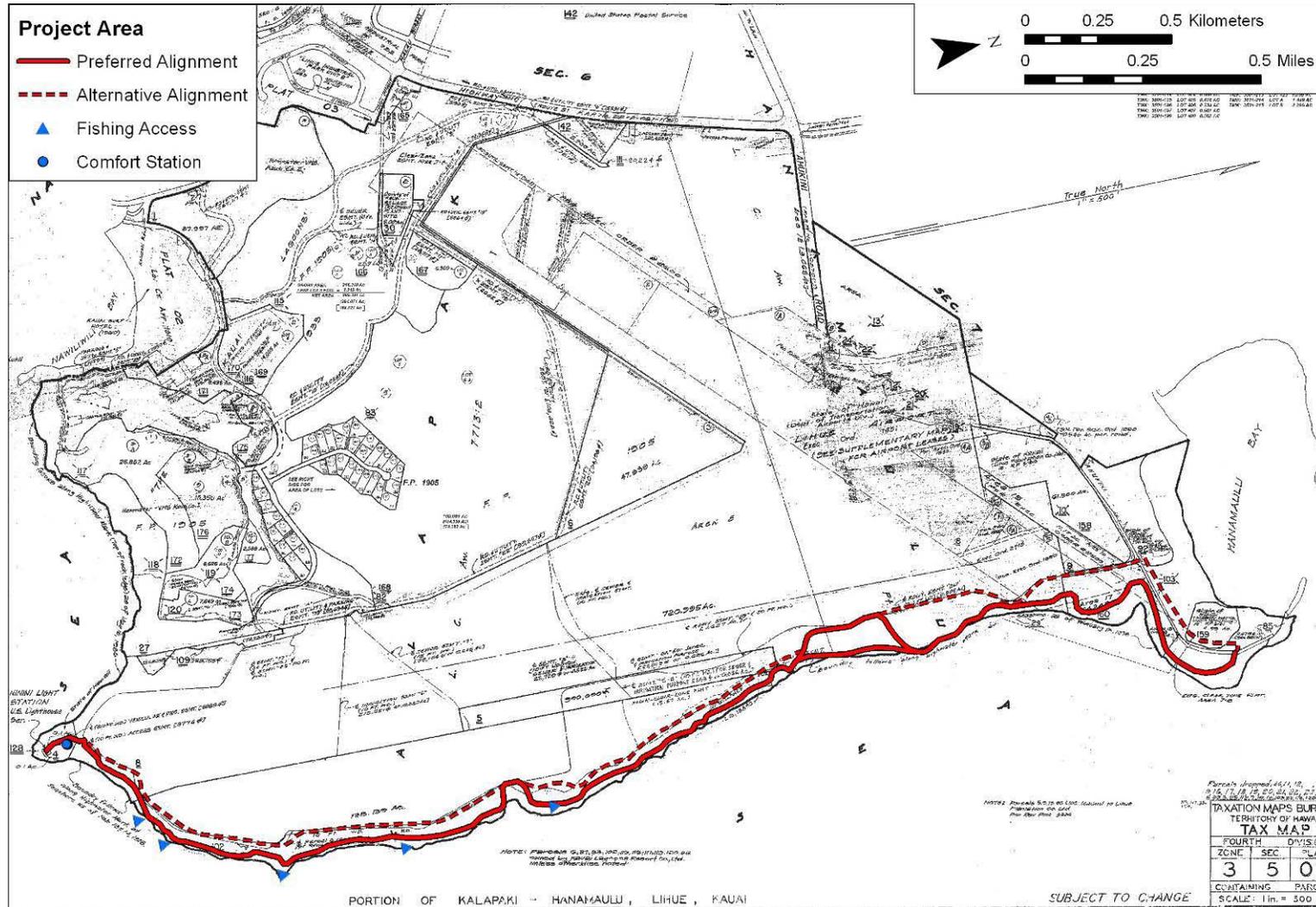


Figure 2. Tax Map Key showing the proposed project alignments



Figure 3. Project area location shown on aerial image; red line depicts all proposed alignments (Google Imagery 2009)

1.1 Scope of Work

The scope of work was designed to satisfy the Hawai'i Administrative Rules Title 13 (Department of Land and Natural Resources), Subtitle 13 (State Historic Preservation Division), Chapter 276 (Rules Governing Standards for Archaeological Inventory Surveys and Reports).

The scope of work includes:

1. Historic and archaeological background research, including a search of historic maps, written records, Land Commission Award documents, and the reports from prior archaeological investigations. This research will focus on the specific project area's past land use, with general background on the pre-contact and historic settlement patterns of the *ahupua'a* and district. This background information will be used to compile a predictive model for the types and locations of historic properties that could be expected within the project area.
2. A complete (100 %) systematic pedestrian inspection of the project area to identify any potential surface historic properties. Surface historic properties will be recorded with an evaluation of age, function, interrelationships, and significance. Documentation will include photographs, scale drawings, and, if warranted, limited controlled excavation of select sites and/or features.
3. Based on the project area's environment and the results of the background research, subsurface testing with a combination of hand and backhoe excavation to identify and document subsurface historic properties that would not be located by surface pedestrian inspection may be appropriate. Appropriate samples from these excavations will be analyzed for cultural and chronological information. All subsurface historic properties identified will be documented to the extent possible, including geographic extent, content, function/derivation, age, interrelationships, and significance.
4. As appropriate, consultation with knowledgeable individuals regarding the project area's history, past land use, and the function and age of the historic properties documented within the project area.
5. As appropriate, laboratory work to process and gather relevant environmental and/or archaeological information from collected samples.
6. Preparation of an inventory survey report, which will include the following:
 - a. A project description;
 - b. A section of a U.S. Geological Survey topographic map showing the project area boundaries and the location of all recorded historic properties;
 - c. Historical and archaeological background sections summarizing prehistoric and historic land use of the project area and its vicinity;
 - d. Descriptions of all historic properties, including selected photographs, scale drawings, and discussions of age, function, laboratory results, and significance, per the requirements of HAR 13-276. Each historic property will be assigned a Hawai'i State Inventory of Historic Properties number;

- e. If appropriate, a section concerning cultural consultations [per the requirements of HAR 13-276-5(g) and HAR 13-275/284-8(a)(2)].
- f. A summary of historic property categories, integrity, and significance based upon the Hawai'i Register of Historic Places criteria;
- g. A project effect recommendation;
- h. Treatment recommendations to mitigate the project's adverse effect on any historic properties identified in the project area that are recommended eligible to the Hawai'i Register of Historic Places.

1.2 Environmental Setting

1.2.1 Natural Environment

The project area extends from the coastline, between Ahukini Landing in the north to Ninini Point in the south, inland approximately 0.8 kilometers (0.5 miles), rising from sea level to approximately 120 feet above mean annual sea level. The area's topography is gently sloping down to the west; there are several shallow intermittent, unnamed drainages between Līhu'e Town and the coast (Juvik and Juvik 1998).

Located on the southeast coast of Kaua'i, the project area is exposed to the prevailing northeast trade winds, and receives 40 to 50 inches of rainfall annually along the coast and up to 100 inches annually inland (western portion of the project area). The annual average temperature ranges from 75-80° F at the airport (Giambelluca et al. 1986; Juvik and Juvik 1998).

Soils within the majority of the project area alignment consist of Koloa stony, silty clay (KvB) with 3 to 8 percent slopes and Koloa stony, silty clay (KvD) with 15 to 25 percent slopes; (Foote et al. 1972; Figure 4). Koloa soils are well drained and formed from basic igneous rock. They are generally dark red to dark reddish-brown in color.

Given the relatively large area covered by the proposed bike and pedestrian path route alignments, and given the presence of developed areas, road ways, resorts and other facilities (e.g., parks, harbors and the airport), vegetation in and around the project area is quite variable. Areas around the airport, for example, consist of landscaped lawns and introduced ornamental and exotic plants. Tall invasive grasses cover much of the project area that was once utilized for commercial sugar cane. The coastal strip is covered in dense vegetation with both native and introduced species, including *naupaka* (*Scaevola sericea*), *'ilima* (*Sida fallax*), *koa haole* (*Leucaena leucocephala*), christmasberry (*Schinus terebinthifolius*), ironwood trees (*Casuarina sp.*) and tall grasses.



Figure 4. Soil types in and around the project area (Foote et al. 1972; U.S. Department of Agriculture 2001)

1.2.2 Built Environment

Background research indicates that nearly the entire project area was, prior to the construction of the Līhu'e Airport, under commercial sugar cane cultivation. This agricultural use of most of the project area resulted in grading and repeated plowing of the land surface. After construction of the airport, residential areas to the west in Līhu'e Town, the resorts between Nāwiliwili Harbor Light and Nāwiliwili town, and other facilities and infrastructure (e.g., roadways and utilities), most of the project area was further modified by modern land uses. The coastal strip area has been less affected by modern land use, but still shows clear evidence of modifications, such as dirt trails and tracks, and illegal dumping of refuse materials.

Section 2 Methods

2.1 Field Methods

The fieldwork component of this archaeological inventory survey was carried out by CSH archaeologists Gerald K. Ida, B.A., Nancine ‘Missy’ Kamai, B.A., Kaipo Akana, and Kendy Altizer, B.A. Fieldwork was conducted intermittently between May 21 and February 16, 2010, under the general supervision of Hallett H. Hammatt, Ph.D. (principal investigator). The field work required approximately 29 person-days to complete.

Fieldwork consisted of a 100% coverage pedestrian inspection within all accessible portions of the project APE, including both alignment options, between Ahukini Landing and Ninini Point. The pedestrian inspection was accomplished through systematic sweeps. The interval between the archaeologists was generally 5-10 m. Ground visibility varied along the coast line between 50% and 100% depending on vegetation. Portions of the project area that were suspected to exhibit human modification (historic properties) were cleared of ground vegetation using hand tools in order to define site areas, provide accurate descriptions, and facilitate mapping. All historic properties encountered were recorded and documented with a written field description, site maps, photographs, scale drawings, and each site was located using Garmin GPS map 60CSx GPS survey technology (accuracy 5-10 m).

2.2 Laboratory Methods

Following the completion of fieldwork, all collected materials were analyzed using current standard archaeological laboratory techniques. Only shell midden and charcoal were collected from Site 50-30-11-2095 (CSH 13). All material collected from the test unit was sorted, identified, and weighed. In general, midden analysis focused on establishing, to the greatest extent possible, shell type to genus and species. Midden analysis and more specific laboratory methods are discussed in Section 5.1. Charcoal was sent for radio carbon analysis. The results of this analysis are discussed in Section 5.2

2.3 Community Consultation

As part of the Section 106 National Historic Preservation Act consultation process for the Nāwiliwili-Ahukini Shared-Use Path project, a letter request for comments was sent by the project proponent in May 2008 to 20 agencies, organizations, and individuals, listed below in Table 1. Written responses were received from four of the consulted parties including SHPD, the Office of Hawaiian Affairs (OHA), the Historic Hawai‘i Foundation, and Ms. Cheryl Lovell-Obatake. Follow-up phone calls were made to parties who did not respond to the initial letter. In addition, the project was reviewed by the Kaua‘i Historic Preservation Review Commission (KHPRC) and the Kaua‘i Historical Society. All of the parties were provided an opportunity to comment on the Draft Environmental Assessment that was published for the project. NHPA 106 consultation efforts, comments received from consulted parties, and resulting mitigation measures are documented in the Final Environmental Assessment for the project.

Table 1. Parties contacted as part of Section 106 of the National Historic Preservation Act

Consulted Party	Affiliation
State Historic Preservation Officer	SHPD, DLNR
Kaua'i Island Archaeologist	SHPD, DLNR
	Office of Hawaiian Affairs
	Kaua'i Island Burial Council
	Native Hawaiian Historic Preservation Council
	Hawaiian Homes Commission
	Association of Hawai'i Civic Clubs
The Honorable James Kunane Tokioka	
Ms. Davianna McGregor	UHM Ethnic Studies Department
	Ho'okipa Network of Hawaiian CBOs
	Kaua'i Heritage Center of Hawaiian Culture & the Arts
Senator Gary L. Hooser	
Mr. Ian K. Costa	County Planning Department
Ms. Kiersten Faulkner	Historic Hawai'i Foundation
Ms. Cheryl Lovell-Obatake	
Ms Healani Trembath	
Mr. Kaupena Kinimaka	
Ms. Patricia Griffin	Lihu'e Business Association
Ms. Patsy Sheehan	Kaua'i Historic Preservation Review Commission
Mr. Randy Wichman	Kaua'i Historical Society

2.3.1 Cultural Impact Evaluation Community Consultation

In addition to the above Section 106 consultation, a separate Cultural Impact Evaluation (CIE) was conducted by CSH (Spearing et al. 2008; Table 2). Hawaiian organizations, agencies and community members were contacted in order to identify potentially knowledgeable individuals with cultural expertise and/or knowledge of the project area and vicinity. The organizations consulted included the State Historic Preservation Division (SHPD), the Office of Hawaiian Affairs (OHA), and Kaua'i Island agencies pertinent to the proposed project area such as the Kaua'i Island Burial Council (KIBC), Kaua'i Historical Preservation Review Commission (KHPRC), DLNR-L Kaua'i Land Division, Kaua'i Paths, Royal Order of Kamehameha, Kaumali'i Chapter no. 3 and Kaleo O Kaua'i and others. A total of seventeen community agencies/organizations or individuals participated in brief informal interviews or provided referrals, and a summary of community consultation is listed in Table 2. Individual response summaries are provided after the table. For a complete overview of the CIE process, the reader is referred to the Cultural Impact Evaluation report (Spearing et al. 2008).

Table 2. Community Consultation undertaken by CSH in 2008 as part of the CIE for the current project

Name	Background, Affiliation	Comments
Achi, June and Karen	Nāwiliwili residents	CSH called on April 29 and June 5, 2008. Karen Achi said she was not familiar with the project and has no comment.
Aipoalani, C. Kunane	Kaua'i Island Burial Council Member	CSH emailed him on April 29, 2008. Mr. Aipoalani referred CSH to Cheryl Lovell-Obatake.
Asing, Kaipo	Kaua'i County Council member and Niumalu resident	CSH emailed and sent letter on April 29, 2008.
Ayau, Halealoha	Hui Mālama O Nā Kūpuna O Hawai'i Nei	CSH sent email March 31, 2008 and a follow-up email on April 22, 2008.
Carvalho, Aaron	Kaua'i Resident	CSH called on June 5, 2008, number has been disconnected.
Chun, Dennis	Kaua'i Community College Professor	CSH called and sent an email with letter on June 5, 2008.
Cockett, Pat	Nāwiliwili resident	CSH called on April 29, 2008 and on June 3, 2008. No answer.
Craft, Gary	Niumalu resident	CSH called on June 4, 2008. See below for phone interview response.
Daubert, Warren	Former Nāwiliwili resident	CSH sent email June 4, 2008.
Grace, Mike and Sondra	Anahola Residents	See response below.
Hubbard, Mark	Kaua'i Island Burial Council Chair	CSH sent a letter on March 31, 2008 and a follow up email on April 22, 2008. Mr. Hubbard referred the letter to Nancy McMahon of SHPD.
Ikeda, Malcolm	Nāwiliwili fisherman and resident	CSH called on 06/05/08. Mr. Ikeda was unavailable.
Kagawa, Kanani	Kaua'i Office OHA Community Resource Coordinator	See Office of Hawaiian Affairs, Clyde Nāmu'ō response below.
Kekua, Kehaulani	Director of Kaua'i Culture & Heritage Center/Kumu Hula	CSH sent an email on March 31, 2008 and a follow-up email April 22, 2008.

Name	Background, Affiliation	Comments
Kinimaka, Percy	Head of Security at Kauai Lagoons	CSH called on 06/05/08, no answer.
Kruse, John	Kaua'i Island Burial Council Kawaihau Regional Rep.	CSH sent letter on March 28, 2008 and emailed him on April 22, 2008. Mr. Kruse referred CSH to Cheryl Lovell-Obatake.
Lovell-Obatake, Cheryl	Nāwiliwili Resident	CSH sent the letter on March 31, 2008. Follow-up phone calls were made April 15 th and 29 th as well as May 7 th and 23 rd . A follow-up letter was sent May 14, 2008. See comments below.
Manea, Jo	Nāwiliwili Resident	CSH received an email on April 12, 2008 referring CSH to Cheryl Lovell-Obatake, Kaipo Asing, Niumalu resident and Kauai County Council member, Bob Schleck of Grove Farm Museum, and residents Pat Cockett, June Achi and daughter Karen.
Masumura, Wesley	Nāwiliwili fisherman and Kaua'i Planning Committee Council member	CSH called on June 5, 2008 and left a message.
McMahon, Nancy	State Historic Preservation Department (SHPD) Kaua'i Archaeologist	CSH sent letter on March 28, 2008 and follow-up email on April 22, 2008. She forwarded the email to Mark Hubbard and referred Cheryl Lovell-Obatake.
Nāmu'o, Clyde	Administrator, Office of Hawaiian Affairs	CSH sent a letter on March 28, 2008. Mr. Nāmu'o replied in a letter dated May 15, 2008. See below for response.
Noyes, Thomas	Kaua'i Paths	CSH sent letter March 31, 2008. He referred Jo Manea.
Oi, Tommy	DLNR-L Kaua'i Land Division	CSH sent letter on March 28, 2008 and a follow-up email April 23, 2008. Mr. Oi has no comment on the project, but referred Cheryl Lovell-Obatake.
Paik, Linda Kaleo	State Historic Preservation	See below for response.

Name	Background, Affiliation	Comments
	Division (O'ahu Office)	
Perry, Warren	Royal Order of Kamehameha, Kaumali'i Chapter Number 3	CSH sent letter on March 28, 2008 and emailed on April 22, 2008.
Pomroy, Sharon	Anahola Resident	See below for response.
Rogers, Nani	Ho'okipa Network member, Kapa'a Resident	See below for response.
Schleck, Bob	Grove Farm Museum	CSH spoke to him on April 22, 2008 and emailed letter. On May 6, 2008, CSH sent follow-up email CSH re-sent letter on May 14, 2008.
Trugillo, William	Ka Leo O Kaua'i	CSH sent an email on March 31, 2008 and a follow-up email April 22, 2008. Mr. Trugillo called CSH on April 23, 2008 saying he would forward new contacts. No additional correspondence was received.
Tsuchiya, Rick	Kaua'i Historic Preservation Review Commission (KHPRC)	CSH sent letter March 28, 2008. Letters were dispersed amongst members at the June 5, 2008 meeting.
White, Chris	Kaua'i Resident	See response below.
White, Robert	Niumalu Resident	See response below.

2.3.2 Community Consultation Summaries

2.3.2.1 State Historic Preservation Department (SHPD)

CSH contacted Linda Kaleo Paik on March 28, 2008. In an email response sent to CSH on April 16, 2008, Linda Kaleo Paik, Cultural Specialist for the History and Culture division of SHPD provided the following:

It is a hard call as I see benefits to having this recreational land use for the community but I also see the detriment of Hawaiian traditional use for the area, such as fishing and gathering. Saying that, I can offer no added information or history at this time. Mahalo for offering me the opportunity to comment on this project.

2.3.2.2 Cheryl Lovell-Obatake

Ms. Cheryl Lovell-Obatake is a Hawaiian cultural specialist and community activist. She was referred to CSH by C. Kunane Apiolani and John Kruse, both Kaua'i Burial Council

Members, Nancy McMahon of the State Historic Preservation Department, Tommy Oi of DLNR-L Kaua'i Land Division and resident Jo Manea. CSH has made several attempts to contact Ms. Lovell-Obatake. It is our understanding that Ms. Lovell-Obatake is interested in sharing her *mana'o* regarding the proposed project but has been out of town. In lieu of a formal statement for this CIE from Ms. Lovell-Obatake, a letter sent to R.M. Towill Corp. (dated November 3, 2007) has been included in the report (see Appendix A). In addition to a number of other concerns (e.g., traffic, policing, beach setbacks, maintenance), Cheryl Lovell-Obatake (writing on behalf of herself and her daughter and son, Maureen and Leslie Lovell-Obatake) expressed the following key cultural concerns regarding the proposed bike/pedestrian path:

Nawiliwili Valley (Kahumoku Rd.)

- Historical properties exist in the valley. Ancient burials, auwai(s) (ditches), L.C.Awards (kuleana 'āina, ancient habitation, etc.. I refer to Cultural Surveys of Hawaii cultural assessment in the 80's of Nawiliwili Valley....
- Section 106 – ACHP and SHPD review, when Federal highway funds are contributed to the bikeway project. A cultural impact assessment under the EIS should be conducted.
- Many historical sites that have been consecrated by people of the old, specifically kanaka maoli (Native Hawaiians) are located in the proposed path areas.
- A cultural impact assessment was completed for the DOT Airport's Division. Refer to Kehau Kekua and Pua Kanahale – cultural practitioners of Hawaii.
- Kehau Kekua – Heritage Center CIA for Kauai Lagoons
- Fishermen's concerns of the bikeway and bikers impeding on existing fishing accesses. The rough dirt road have long been used by fishermen. The proposed bikeway should not interfere with fishermen's access to the coastal shoreline. Vehicular access is preferable to reach fishing destinations.
- Is DOCARE aware of the bikeway and their responsibilities to police and regulate fishing methods and seasonal (kapu system) fishing when non-residents from other islands enter these fishing grounds, via Hawaii Super Ferry?
- Native Hawaiians Access Rights Project – Kauai Pilot Project
- Therefore, *it is* our opinion that the proposed route into Nawiliwili Valley be rejected.

2.3.2.3 Robert White

Mr. Robert White, a resident of Niumalu, submitted his statement to CSH in an email sent on June 4, 2008. During his childhood Mr. White would spend summers in Nāwiliwili. In the

1970's he moved to the island of Kaua'i and twelve years ago moved into Niumalu. Following are Mr. White's comments about the proposed project:

I would like to say that the proposed end of the path in Niumalu would allow the Niumalu residents a great opportunity to start their bike ride in a safe manner. The road along Nawiliwili pier is well used and for an alternate route through Lihue.

The added safety of having a Bike/Pedestrian Path designation along the road to the Kauai Marriott property makes a lot of sense. After entering the Marriott property, this area also is already improved with roads, so I cannot see any cultural changes except adding to the safety and enjoyment of the local community. The entire route up to where the Marriott golf course is adjacent to the airport security fences is already developed for the most part with the existing network of roads and golf cart paths. As you leave the Marriott property, there is a well-used dirt road that has been the access to Ninini Point for as long I can remember. It may be a remnant road from the pineapple and sugar that was grown near the airport in the early 1960's. And of course, it serves as a service road to the lighthouse beacon. Even though it is hard to determine from the maps provided, it appears that the section from Ninini Point to Ahukini also exists roads used by local fishermen and people riding their bikes.

I believe this road is a remnant from the plantation days where their service roads often ran along the perimeters of their fields. Since the area has already undergone extensive use for the past 48 years that I know of, I believe that the road that is close or parallels the existing dirt road along the airport would be relatively non-invasive. I can speak of my experience past this point, as we never played past Ahukini.

I believe that adding to the outdoor recreational experience in a safe way would be a great legacy for this generation to pass on.

Most of the people I know do not ride their bikes along the roads due to the narrow road conditions and lack of safe shoulder space for bikes to traverse.

I never heard of cultural sites along this area but I am sure if there is testimony to this fact, that there will be an archaeological survey done.

2.3.2.4 *Chris White*

Mr. Chris White, a resident of Niumalu, and brother to Mr. Robert White, submitted his statement to CSH in an email sent on June 4, 2008. During his childhood, Mr. White would spend summers in Nāwiliwili. Mr. White provided the following thoughts regarding the proposed project:

I am aware of development and use by the plantations, fishermen and beach goers but do not know of any archaeological sites. I support the path is a great way of increasing community cohesiveness and health by providing a safe and beautiful path where neighbors can meet, get exercise, provide an important recreation amenity, and offer an alternate way of getting between Lihue and the beach/coast without cars.

2.3.2.5 Gary Craft

In a telephone interview conducted by CSH on June 4, 2008, Gary Craft shared his thoughts about the proposed project. A resident of Niunalu for nineteen years, Mr. Craft is an avid bike rider, riding his bike everyday to work and on the weekend for exercise. He has traveled extensively across the United States, Japan, New Zealand and northern Europe on bike.

He says that once the final part of the path is connected (the Anahola section), it will be a great boost for tourism. The 100-mile Bike/Pedestrian Path would be a great tourist attraction, one of the best in the world. Yearly bike riding events could take place and boost tourism. He believes that the Bike/Pedestrian Path is a great way to enhance tourism without detracting from the island.

He does object to the high cost of the bike route. He refers to other trails in the U.S. that the Nāwiliwili-Ahukini Bike/Pedestrian Path could be modeled after; One is the "Rails to Trails" program in Minneapolis, which converts old railways into bike routes. He suggests instead of using concrete to pave the path, a pea gravel path should be instated, like those in Minneapolis. This would cut down on costs and inhibit bikers from speeding and hurting pedestrians.

When asked about cultural infringement, Mr. Craft says that he doesn't see the Bike/Pedestrian Path detrimental to anyone.

When asked about fishing in the area, he reported that he occasionally sees a few fishermen along the coast and even if it's only one person, they should have access. The Bike/Pedestrian Path is not directly on the coast, so it won't affect fishermen. However, there may be some trouble with four-wheelers used for beach access that may ride over the Bike/Pedestrian Path. Access for fishermen should be a part of the plan. He believes that the plan should be inclusive of both fishermen and bike riders. The biker's path and the cars could be parallel at times, and a policeman could monitor the cars not driving on the Bike/Pedestrian Path.

When asked about security, Mr. Craft suggests having proper signage with rules plainly stated. He recalls biking in Mount Tam [Mt. Tamalpais], California and seeing policemen on bicycles enforcing the rules by giving tickets to violators. He also recalls seeing "biker etiquette" such as bikers ringing their bells well in advance before driving past a pedestrian. If bikers could follow the same etiquette in the Nāwiliwili-Ahukini Bike/Pedestrian Path, it would be ideal for both pedestrians and bikers. He recalls there being some homeless people illegally squatting in the area three or four years ago, but they have since moved.

Another suggestion Mr. Craft shared was to have the trail go closer to the Nāwiliwili Lighthouse. He believes it is an important cultural place that should be highlighted to tourists.

He believes that the Bike/Pedestrian Path will pay off in the long run. He uses his car an average of 1,000 miles/year as he rides his bike to work and also rides for fun on the weekends.

2.3.2.6 Sharon Pomroy

Ms. Pomroy has been a resident of Anahola for thirty years and is a recipient of a Hawaiian Homelands agricultural/residential parcel. CSH interviewed her at her home on June 6, 2008.

Ms. Pomroy is concerned about the upkeep and care of the Bike/Pedestrian Path. She also expressed concern about a part of the Bike/Pedestrian Path that will have to cross with a street.

The area is one-lane traffic only and may affect drivers. Although not part of the current Nāwiliwili-Ahukini Bike/Pedestrian Path project, Ms. Pomroy shared that she is concerned with the Bike/Pedestrian Path's connection in Anahola. There is Hawaiian Homelands in the area and she does not want Hawaiians to be displaced from their homes because of the Bike/Pedestrian Path.

2.3.2.7 Mike and Sondra Grace

Mike and Sondra Grace, *kama'āina* of Anahola, were interviewed via telephone by CSH on June 6, 2008. They have been the owners of the Anahola Beachfront Bed and Breakfast for thirty years. Mr. and Mrs. Grace support the Bike/Pedestrian Path, saying that it is very popular for the public. Everyday they drive near the Path and always see people on it. They, like Ms. Pomroy, express concern over the connection in Anahola and do not want to see Native Hawaiians displaced from Hawaiian Homelands.

2.3.2.8 Aunty Nani Rogers

Aunty Nani Rogers was interviewed by CSH via telephone on June 9, 2008. She is a Native Hawaiian, born and raised in Kapa'a. She is a member of the Ho'okipa Network, which strives to preserve Kaua'i.

When asked if there were any culturally significant sites in the project area, Aunty Nani states that there is the possible presence of burials in the Wailua Golf Course. She also mentioned the very real possibility that *iwi* (bones) may be discovered, and if so, they should be treated respectfully and appropriately.

She also mentions recent public discussions about allowing dogs on the Bike/Pedestrian Path. She says that dogs were originally allowed on the Bike/Pedestrian Path, but were banned after irresponsible pet ownership (e.g. leaving dog excrement on the path). She believes that the dogs should be allowed back on the path, but the community needs to police themselves.

Another concern is how close the Bike/Pedestrian Path is to the Līhu'e Airport. Airport security as well as safety for bike riders is an issue.

She also would like the Anahola Hawaiian Homelands to be left alone by the Bike/Pedestrian Path. She states that the public is not allowed access to that area.

Generally, she says that the public enjoys the Bike/Pedestrian Path and is in support of the project.

2.3.2.9 Office of Hawaiian Affairs, Clyde Nāmu'o

Mr. Nāmu'o responded to a request for consultation by CSH by a letter dated May 15, 2008. He stated that OHA had no specific comments at the time, but asked that final alignment option be routed around cultural sites to avoid adverse impacts.

2.3.2.10 Randy Wichman

Mr. Wichman attended a site visit with CSH archaeologist Gerald Ida and project proponent Doug Haigh on November 11, 2009. Site 50-30-11-2089 was relocated to assess the possibility

of a 50 ft buffer around the site. Mr. Wichman felt the possible burial mound was definitely a structure, but had no comment on its function as a burial site.

2.4 Document Review

Background research included: a review of previous archaeological studies on file at SHPD/DLNR; review of documents at Hamilton Library of the University of Hawai'i, the Hawai'i State Archives, the Mission Houses Museum Library, the Hawai'i Public Library, and the Archives of the Bishop Museum; study of historic photographs at the Hawai'i State Archives and the Archives of the Bishop Museum; and study of historic maps at the Survey Office of the Department of Land and Natural Resources. Historic maps and photographs from the CSH library were also consulted. In addition, Māhele records were examined from the Waihona 'Aina database (www.waihona.com).

Section 3 Background Research

This section focuses on the traditional background of coastal and near coastal portions of three *ahupua'a* in the *moku* (traditional district) of Puna: Hanamā'ulu, Kalapakī and Nāwiliwili (Figure 4). The subject project area is located between the two main bays and streams of Nāwiliwili (to the south) and Hanamā'ulu (to the north). These two meandering streams, which drain the slopes of Kilohana Crater (1143 feet elevation), were once home to thousands of native Hawaiians living a traditional subsistence lifestyle.

3.1 Mythological and Traditional Accounts

Handy (1940:67) describes these two valleys in his chapter on the main *kalo* (taro) growing locations in Puna Moku:

[Nāwiliwili] For 3 miles inland from the sea the Nawiliwili River twists (*wiliwili*) through a flat valley bottom which was formerly all in terraces. Inland, just above the bay, three Hawaiian taro planters cultivate wet taro in a few small terraces. Most of the land is [now] in pasture.

Hanamaulu River, rising below Kilohana Crater, winds its zigzag way to the sea through a relatively broad gulch, which had many small terraces commencing at a point about 2.5 miles up from the sea and continuing down to the delta of the river which begins about a mile inland. The small terraces inland from the highway are unused. The delta region is a continuous area of flatland now mostly under sugar cane and house sites. Formerly this [delta] must have been planted in taro.

A fishing village called Kalapakī was located between these two major stream valleys, near the seashore, before the historic period. This general area between the streams and *makai* of the present town of Līhu'e, *mauka* of the village house sites, had several fishponds and small drainages. The village was located east and north (around and up the coast) from Kalapakī Beach. There are some unique aspects of traditional land use and settlement in the subject project area, as discussed below (Section 3.2 Subsistence and Settlement).

Kalapakī, famous for its wind, appears to have had closer ties with Nāwiliwili than with Hanamā'ulu. Kalapakī is well-known in a traditional sense for its several *heiau*. Hanamā'ulu is probably best known as the birth place of Kawelo, the famous hero and Mō'ī (king) of Kaua'i in the late 17th to early 18th century. Nāwiliwili is well-known for its *heiau* at Kuhiau, reportedly at least four acres in size, and its associated *pōhaku* (rock) called Paukini located in the bay.

3.1.1 Place Names

Translations presented without attribution in this subsection are from Pukui et al. (1974), unless indicated otherwise.

Pukui et al. (1974) list but do not translate Kalapakī, defined simply as a “beach” in Līhu'e district. Pukui and Elbert (1986) define the word kalapakī (with a small “k”) as “double-yolked egg, *Kaua'i*.” Aside from its beach and landing, Kalapakī is probably best known in a traditional sense for its *heiau* of Ahukini and Ninini (and possibly another at Kūki'i). Ahukini has been

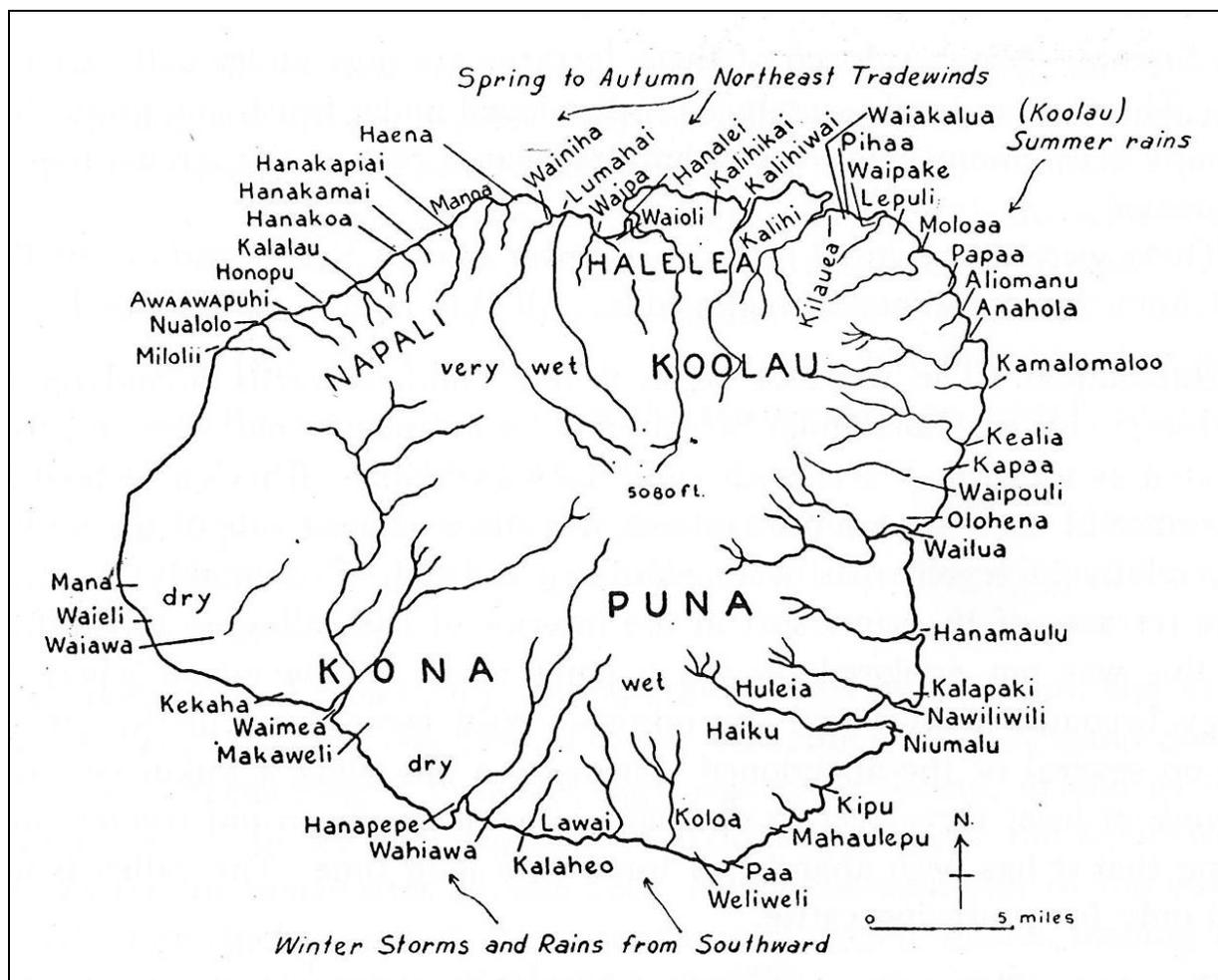


Figure 5. *Moku* (traditional districts) and *ahupua'a* of Kaua'i; note the location of "Hanamaulu," "Kalapaki," and "Nawiliwili" (Handy 1940)

translated as "altar [for] many [blessings]" (brackets inserted by Pukui et al. 1974), and this was also the name for a *heiau* in Kāne'ōhe. Ninini has been translated as "pour," as in *ninini wai* (to pour water).

Most sources suggest Nāwiliwili takes its name from the *wiliwili* tree (*nā* is the plural article, as in "the *wiliwili* trees" or "place of the *wiliwili* trees"). According to Pukui and Elbert (1986), the *wiliwili* (*Erythrina sandwicensis*) is a native leguminous tree whose flowers and pods are used for *lei*, and whose light wood was once used for surfboards, outriggers, and net floats. Handy (1940:67) suggests a *kaona* (hidden meaning) for the name Nāwiliwili based on a reduplication of the word *wili*, which means "twisted," as in the meandering Nāwiliwili Stream.

Hanamā'ulu has been translated as "tired (as from walking) bay," which may be related to *mo'olelo* (oral history) and *'ōlelo no 'eau* (poetical sayings) about the "stingy" people of this place (see below).

Līhu'e (literally translated as "cold chill") became the modern political name for the traditional *moku* (district) of Puna (Figure 5). It is clear that Līhu'e is a traditional place name, but less certain that the subject project area was specifically called this name prior to the historic era. (It is also well known that Līhu'e was a traditional settlement area near the current Schofield Barracks on O'ahu.) Historical documents suggest the name Līhu'e was first applied to this area of Kaua'i by Kaikioewai (Governor of Kaua'i) in the 1830s, perhaps after Kaiwioewai's upcountry residence on the island. On the other hand, Nathaniel Emerson's translation of the famous *oli* (chant) cycle of Hi'iaka and Pele (see below) mentions Līhu'e with the other main places names of this area.

Kilohana, source of the water of the Nāwiliwili and Hanamā'ulu Streams, has several possible meanings: Pukui et al. (1974) list three: "lookout point," "outer tapa," or "best, superior."

3.1.2 Mo'olelo Associated with Specific Place Names

There are many *mo'olelo* associated with the project area environs. For example, one of the oldest and most famous legendary accounts in Hawaiian oral tradition describes the travels and exploits of Pele, the Hawaiian volcano goddess, and one of her sisters, Hi'iakaikapoliopole (more commonly known simply as Hi'iaka). Pele, in her lengthy *oli* (chant) of literally hundreds of named winds of Kaua'i, lists those of Nāwiliwili, Kalapakī, Ahukini, Līhu'e, Kapaia, and Hanamā'ulu (Nogelmeier 2006):

He he'one ka makani o Nāwiliwili
He Wāmua ka makani o Kalapakī
He 'Ehukai ka makani o Ahukini
He Pahola ke kiu ho o kii makani lele kula o Līhu'e
He Kuli'āhiu ka makani o Kapaia
He Ho'oluakainehe ka makani o Hanamā'ulu

The wind of Nāwiliwili is a Hu'eone

The wind of Kalapakī is a Wāmua

The wind of Ahukini is an 'Ehukai

A Pāhola wind is the scout that fetches the winds sweeping the Līhu'e plains

The wind of Kapaia is a Kuli'āhiu

The wind of Hanamā'ulu is a Ho'oluako'inehe

A full description of the numerous oral-historical associations with the subject project area is beyond the scope of this document. The Cultural Impact Evaluation (CIE) for the subject project area contains an extensive oral-historical presentation, including specific *mo'olelo* about Kalapakī, Nāwiliwili, Hanamā'ulu, Ahukini and Ninini, Kuhiau Heiau and its *pōhaku* Paukini, and Kilohana (Spearing, Monahan, and Hammatt 2008).

3.2 Subsistence and Settlement

The *ahupua'a* of Hanamā'ulu, Kalapakī and Nāwiliwili were permanently inhabited and intensively used in pre-contact times, based on a large amount of archaeological, historical, and oral-historical documentation. The coastal areas were the locus of permanent house sites and temporary shelters, *heiau*, including *ko'a* and *kū'ula* (both types of relatively small shrines dedicated to fishing gods), and numerous trails. There were fishponds at Kalapakī and

Nāwiliwili. Further from the current project area, there were numerous house sites and intensive cultivation areas within the valley bottoms of Nāwiliwili and Hanamā'ulu Streams.

Before the historic era, there was a village at Kalapakī (probably between Kalapakī Beach and Ahukini), and another, likely larger, at Nāwiliwili to the southwest. Another village was located near the mouth of the Hanamā'ulu Stream.

The upland areas of these *ahupua'a* contained native forests and were cultivated with crops of *wauke* (paper mulberry, *Broussonetia papyrifera*), *'uala* (sweet potatoes, *Ipomoea batatas*), and *ipu* (bottle gourd). Legends and historic documentation (especially Land Commission records) elaborate on many of these important natural resources.

The archaeological record of the Līhu'e District indicates a date range of circa A.D. 1100 to 1650 for pre-contact Hawaiian habitations (Walker et al. 1991). A radiocarbon date of A.D. 1170-1400 was obtained from excavated sediments near the mouth of Hanamā'ulu Stream.

Land Commission documents (described in more detail below) indicate a land use pattern that may be unique to this part of the island, or to Kaua'i, in general and houselots in a separate portion. In most places, *kula* lands are defined as drier landscapes and they do not typically occur next to, and among, wetter *lo'i* lands.

3.3 Streams

Nāwiliwili and Hanamā'ulu Streams have their *maka* (source) on the slopes of Kilohana Crater, four-and-one-half miles to the west. Kilohana is associated with *mo'olelo* about a giant, bird hunters who lure him to his death, and *koa* (warriors) that come to avenge the giant's murder only to be thrown to their deaths by the young bird hunter Lahi. It is important to point out that the water in these two streams running by the subject project area, literally defining its northern and southern margins, would have been closely associated with Kilohana in the parlance and expressions of native Hawaiians living a traditional lifestyle in and around the project area.

Two smaller streams, Koena'awa nui and Koena'awa iki, are identified in Land Commission documents, although neither of these is named on any extant maps. Given the gently sloping character of the natural lay of the land from Līhu'e to the coast, it is possible that there were once a few other smaller drainages traversing what is now the airport, resort and golf course area; and, that native Hawaiian planters made use of this water (Figure 6).

3.4 Heiau

There are several historic map sources showing multiple *heiau* along the seashore and stream mouths in and around the general footprint area of the proposed project (Figure 7 and Figure 8). For the most part, all physical evidence of these *heiau* has been obliterated by historic activities and more recent development. Despite this, however, many people still appreciate the sacred nature of the landscape areas in and around these *heiau* (e.g., the rocky points at Ninini, Ahukini, and Kūki'i). These differences between western and indigenous ideas about value and significance are rarely mentioned in archaeological studies, but they are fundamental to understanding traditional resources of this area.

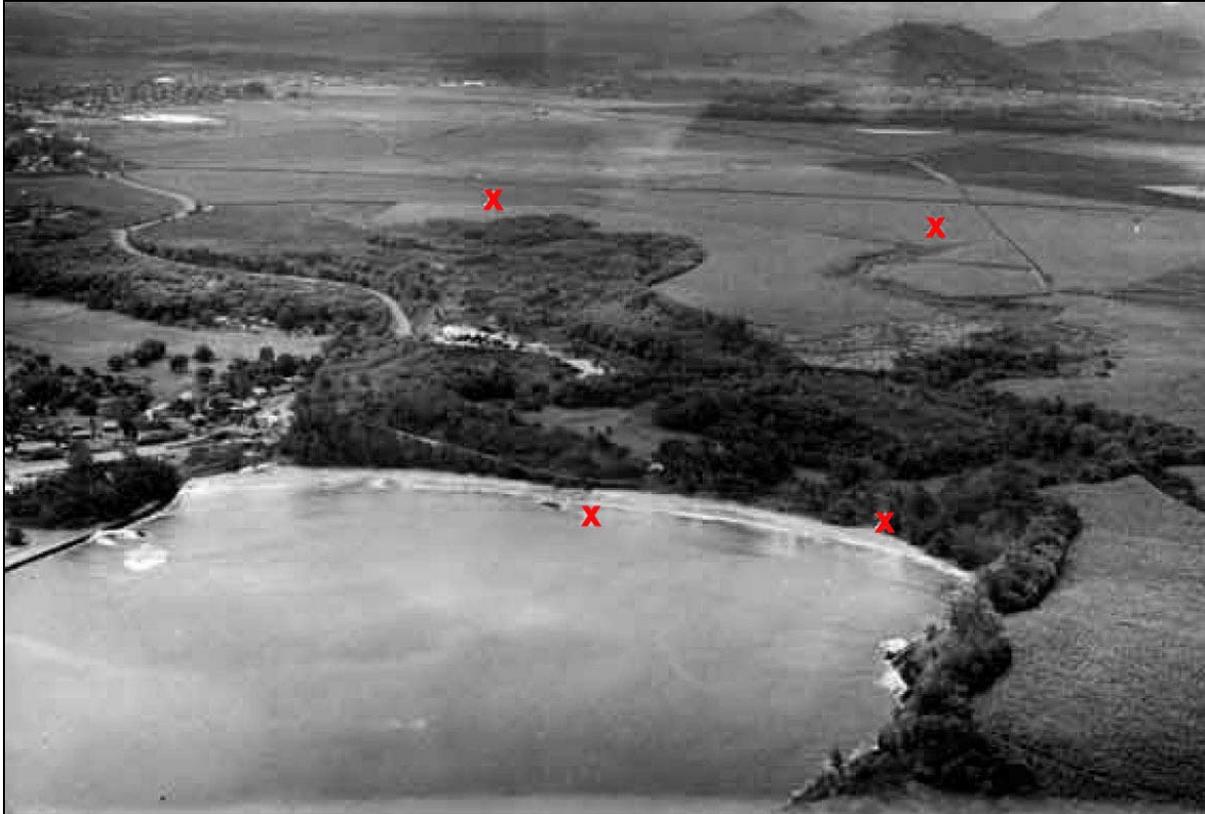


Figure 6. Kalapakī Bay, showing location of two streams and their outlets (red Xs) to Kalapakī Bay; Koena'awa nui stream is on the left and Koena'awa iki is on the right (undated photograph in Kaua'i Museum files, see <http://www.hawaii.edu/environment.ainakumuwai.html>)

Lt. George G. Jackson's 1881 map of Nāwiliwili Harbor shows there were major *heiau* on both sides of the mouth of Nāwiliwili Stream (Figure 7). On the east side, in Kalapakī Ahupua'a, Jackson's map depicts "remnants of ancient heiau" near Kūki'i Point. On the west side of the bay, in Nāwiliwili Ahupua'a, there is an area labeled "Kuhiau" near the court house; this was the previous location of Kuhiau Heiau.

In addition to the *heiau* at Kūki'i and Kuhiau, Damon's (1931) map shows two additional sites located in coastal Kalapakī Ahupua'a: Ninini Heiau at the point of the same name, located east of Kūki'i, and Ahukini Heiau, located about halfway to Hanamā'ulu Ahupua'a (Figure 8).

Bennett's (1931) archaeological survey of the late 1920s documented three *heiau* within the general footprint area of the proposed project (see Section 5 Previous Archaeological Research for Bennett's map). Kuhiau Heiau, State Inventory of Historic Properties (SIHP) No. 99, was located at Nāwiliwili near the site of the old courthouse. By Thrum's time, approximately two decades before Bennett's work, this *heiau* was already described as "long since destroyed" (Bennett 1931:124). Thrum described it as:

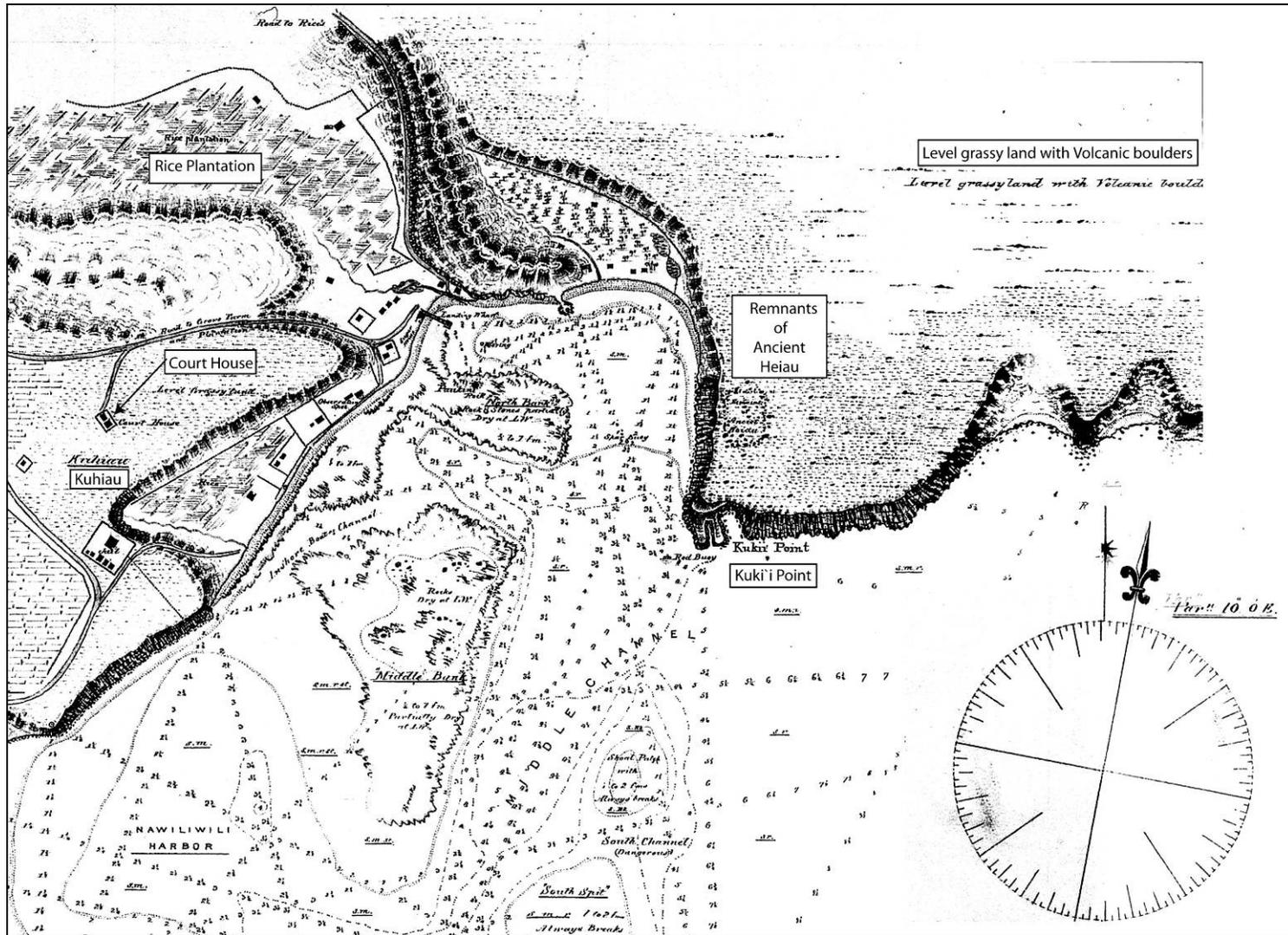


Figure 7. Detail of 1881 map of Nāwiliwili Harbor by Lt. George G. Jackson, showing remnant of ancient heiau near Kūki‘i Point; also note the area called "Kuhiau" near the court house (left-hand side), previous location of Kuhiau Heiau

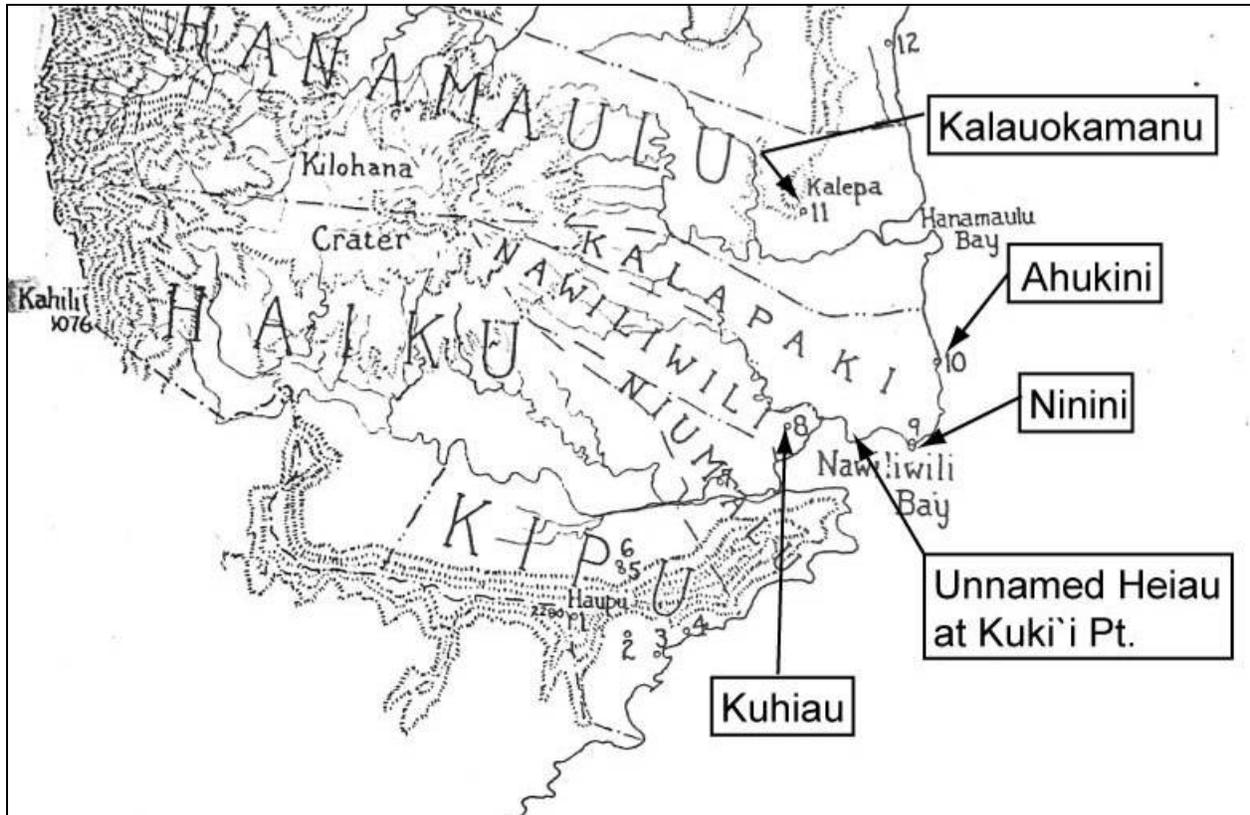


Figure 8. Damon's (1931) map showing *heiau* along the coast sections of Hanamā'ulu, Kalapakī, and Nāwiliwili Ahupua'a

[a] large paved heiau, whose enclosure covered an area of about four acres...The rock Paukini, now separated from but formerly connected with the shore, was where the kahuna lived. This is said to have been the largest and most famous on Kauai in its day. (Bennett 1931:124)

Ninini Heiau (SIHP No. 100) and Ahukini Heiau (SIHP No. 101) were both described by Bennett as totally destroyed. According to Thrum (Bennett 1931:125), Ahukini was “[a] heiau of medium size; foundations only now remain.” Thrum's (1907) island-wide listing of *heiau* on Kaua'i includes another “destroyed” *heiau* called Pohakoelele.

3.5 Historical Background

This section is based on prior works by Damon (1931), Hammatt and Creed (1993), and Creed et al. (1999). Damon's *Koamalu* (a history of the Rice Family) contains excerpts from a large number of 19th century primary sources, including first hand observations of life and times in and around Līhu'e / Nāwiliwili. Creed's work, in particular, contains extensive documentation and interpretation of Land Commission documents. Dorrance and Morgan (2000), Donohugh (2001), Wilcox (1996) and Condé and Best (1973) all document historical aspects of commercial sugar cane, railroads, irrigation, plantations, and other 19th and 20th century changes.

3.5.1 Early Historic Period

The first written accounts of Kaua'i are from travelers, missionaries, and surveying expeditions. Missionary accounts of the first half of the nineteenth century provide the majority of the early written records for this particular part of Kaua'i (see Figure 8).

Damon (1931:401) wrote about Hiram Bingham's 1824 observations from his memoir, *A Residence of Twenty-One Years in the Sandwich Islands*, published in 1847:

In 1824, when walking around the island from Waimea to counsel the people after the wreck of *The Cleopatra's Barge*, Rev. Hiram Bingham crossed from Hanapepe, as has been seen, over the old upland trail back of Kilohana, and wrote of it as 'a country of good land, mostly open, unoccupied and covered with grass, sprinkled with trees, and watered with lively streams that descend from the forest-covered mountains and wind their way along ravines to the sea, - a much finer country than the western part of the island.'

In the 1830s, another missionary, Rev. Peter Gulick, was living on Kaua'i at Waimea and Kōloa. He made the following observation about the kind of provisions one could find in Hanamā'ulu at the time:

...The governor [Kaikioewai] reached Hanamaulu in his canoe just as we entered on horse back... This is the governor's custom, when he travels. A man is sent before to give notice that provision may be made, at the different stopping places, for him and his train: which frequently amounts to two hundred [people]... I with a few natives had a comfortable house at Hanamaulu. The inhabitants brought us fish fresh from the ocean, fowls, taro, potatoes, and a pig, all except the fish roasted or baked in the ground... A youth who went with me for the purpose prepared my food. My bed, which was made with mats, was covered with ten tapas; these were the bed clothes which according to custom were presented to the guest for whom they were spread. (Damon 1931:360)

At this same time, in the 1830s, the Governor (Kaikio'ewa) founded a village at Nāwiliwili that eventually developed into Līhu'e. According to Hammatt and Creed (1993), the name Līhu'e was not consistently used until the establishment of commercial sugar cane agriculture in the middle 19th century'; and from the 1830s to the *Māhele*, the names Nāwiliwili and Līhu'e were used interchangeably to some extent to refer to a settlement along Nāwiliwili Bay. Some sources attribute the decision to call this area Līhu'e (literally translated as "cold chill") to Kaikio'ewa, who apparently named it after his nearby upcountry home. Waimea and Kōloa were preferred anchorages compared with Nāwiliwili, which opens directly east to the trade winds. Gales were known to blow ships onto the rocks. During the whaling era, Kōloa, which was home to the earliest major commercial operations in the Hawaiian Islands, was the preferred anchorage because of the ready supply of nearby food stuffs for resupply of the ships.

By 1830, the sandalwood trade had waned and the whaling industry was just beginning. At the same time, commercial agriculture was being established on Kaua'i. When the first crop of sugar cane was harvested at Kōloa, the king himself commanded that portions of his private land be planted in cane. The Governor of Kaua'i Kaikio'ewa in 1839 began farming the slopes of

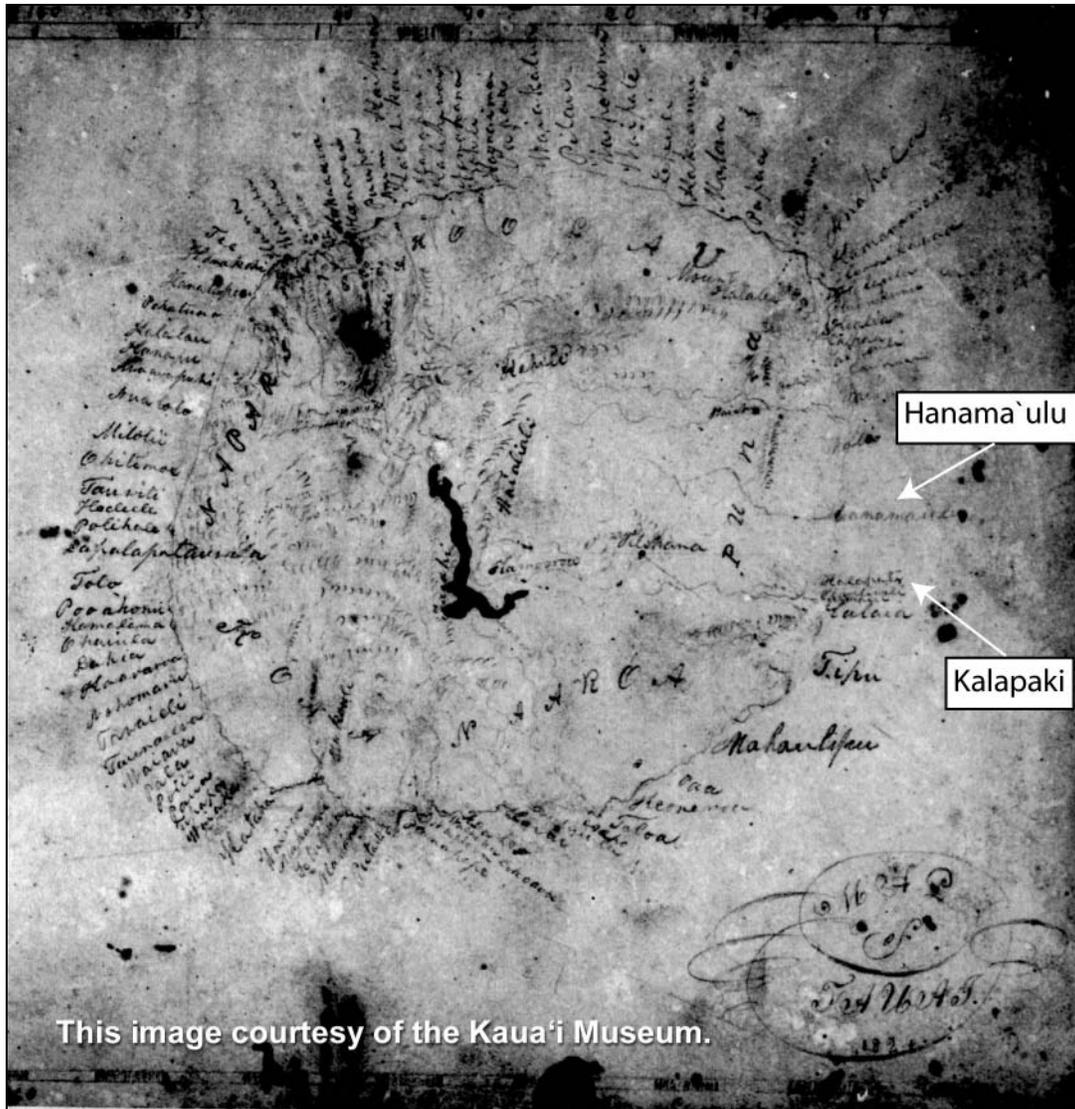


Figure 9. 1824 map of Kaua'i showing Hanamā'ulu and Kalapakī (Kaua'i Museum)

Nāwiliwili Bay where there was more rain than at Kōloa (Dorrance and Morgan 2000). He also built a house and church in Nāwiliwili Ahupua'a.

Donohugh (2001:94) describes Governor Kaikio'ewa's attempt to establish the first commercial sugar mill and plantation in Līhu'e in 1839:

During the early decades of Kōloa Plantation, other sugar plantations had started up on the island. One was to result in the ascendancy of Līhu'e to the principal town and seat of government on Kaua'i, replacing Wailua. When Kaikio'ewa was appointed governor, he located his home in what is now the Līhu'e District. He planned to grow sugar cane but died in 1839 before his plans could be realized.

Kaikio'ewa was responsible for the name [Līhu'e], which means "cold chill," the name of his previous home at a higher and chillier altitude on O'ahu.

Donohugh (2001:94) describes observations by James Jarves, who passed through Līhu'e in 1838:

... [He] found only a church built by Kaikio'ewa and a few grass houses. He commented the governor had selected Hanamā'ulu Bay as the harbor, "entirely overlooking the fact that it opened directly to the windward."

Kaikio'ewa died in 1839 soon after the start of the sugar plantation, which lasted only one year and closed down in 1840 (Dorrance and Morgan 2000).

Around this time, perhaps as late as 1842, the first missionaries settled in the Līhu'e area led by Dr. and Mrs. Thomas Lafon, and assisted by Rev. and Mrs. Peter Gulick from Kōloa. Schools were opened, and some missionaries attempted to grow cotton as the first intensive cash crop, but were unsuccessful (Damon 1931).

An account of the United States Exploring Expedition, which passed through Līhu'e in 1840, talks about the area, but also mentions the forced removal of *kama'āina* from the coastal areas:

At noon they reached Lihui, a settlement lately undertaken by the Rev. Mr. Lafon, for the purpose of inducing the natives to remove from the sea-coast, thus abandoning their poor lands to cultivate the rich plains above. Mr. Lafon has the charge of the mission district lying between those of Koloa and Waioli. This district [Līhu'e] was a short time ago formed out of the other two.

The principal village is Nawiliwili, ten miles east of Koloa. This district contains about forty square miles, being twenty miles long by two broad. The soil is rich: it produces sugar-cane, taro, sweet-potatoes, beans, etc. The only market is that of Koloa. The cane suffers somewhat from the high winds on the plains.

The temperature of Lihui has much the same range as that of Koloa, and the climate is pleasant: the trade-winds sweep over it uninterruptedly, and sufficient rain falls to keep the vegetation green throughout the year. No cattle are to be seen, although the pasturage is good. (Wilkes 1845:67-68)

With the death of Kaikio'ewa, governorship of Kaua'i was transferred for a brief period to his widow Keaweamahi. Then followed the brief tenure of Chiefess Kekau'ōnohi and her husband Keali'iahonui (son of King Kaumuali'i) after which the governorship passed to Paulo Kanoa in 1848. Kanoa had two houses overlooking Nāwiliwili Bay: one on the bluff south of Nāwiliwili Stream (the present site of Kaua'i High School) and another at Papalinahoa, north of the bay (Damon 1931).

William DeWitt Alexander, son of Waioli missionary William P. Alexander, traveling from Kōloa to the north shore of Kaua'i in 1849 recorded some descriptive notes of Hanamā'ulu :

A few miles further on we crossed the picturesque valley of Hanamaulu. This valley is prettily bordered by groves of Kukui, koa, & hala trees, and is well cultivated with taro. A fine stream flows through the midst of it, which makes a remarkable bend at this place like a horse shoe. We then traveled along the

seashore at the foot of a range of hills through groves of hau, & among hills of sand. It was now after dark, but the moon shone brightly, and there was no difficulty in finding our way. About eight o'clock we arrived at the banks of the Wailua river. (Kaua'i Historical Society 1991:121)

One of the last vestiges of the pre-cash crop landscape is depicted in the diary entry for the Rice family's arrival on Kaua'i in 1854. During the second half of the nineteenth century, western settlers and entrepreneurs set their sights on southeast Kaua'i. Damon describes the Līhu'e landscape at the time of the family's arrival at Nāwiliwili Bay:

From the deck of their river craft in 1854 Mrs. Rice and the children could plainly see above the rocky shore and ruins of Kuhiau, the old heiau, or temple, and nearby on the bluff the flaming blossoms of a great wili-wili tree among koa trees which ten grew almost down to the water's edge. (Damon 1931:17-18)

3.6 Middle to Late 19th Century

The middle 19th century brought great changes to Līhu'e, including private and public land ownership laws known as the *Māhele* (literally, 'to divide' or 'to section'), and commercial sugar cane agriculture, which firmly established Līhu'e's place in state and global economic markets. Coulter's (1931) population density estimates for 1853 (Figure 10) show a relatively large settlement around Nāwiliwili Bay.

3.6.1 The Māhele

In the middle 19th century, during the time of Kamehameha III, a series of legal and legislative changes were brought about in the name of 'land reform' (see the works of Jon Chinen 1958, 1971 for a thorough and well-written explanation). Previous to the *Māhele* (, all land belonged to the *akua* (gods), held in trust for them by the paramount chief, and managed by subordinate chiefs. Following the enactment of a series of new laws from the middle 1840s to middle 1850s, all land in the Hawaiian Kingdom was divided into three main types: government (or Crown) land; *ali'i* (chiefly) lands; and commoner lands, which *maka'āinana* could in principle obtain in fee simple, following passage of the Kuleana Act in 1850. This act allowed *maka'āinana* (in principle) to own land parcels at which they were currently and actively cultivating and/or residing. In theory, this 'set aside' of hundreds of thousands of acres as potential *kuleana* parcels ultimately led to about 10,000 claimants obtaining approximately 30,000 acres, while 252 chiefs, for example, divided up about a million acres. Many or most Hawaiians were simply disenfranchised by these acts.

3.6.1.1 Hanamā'ulu

Land Commission documents for Hanamā'ulu describe *lo'i*, *kula*, and house sites along both sides of the Hanamā'ulu River, extending from the shore up to the village of Kapaia. *Kula* and *lo'i* lands are often included together in one *'āpana* (portion of a claim), with house sites belonging to separate *'āpana*, slightly removed from the floodplain.

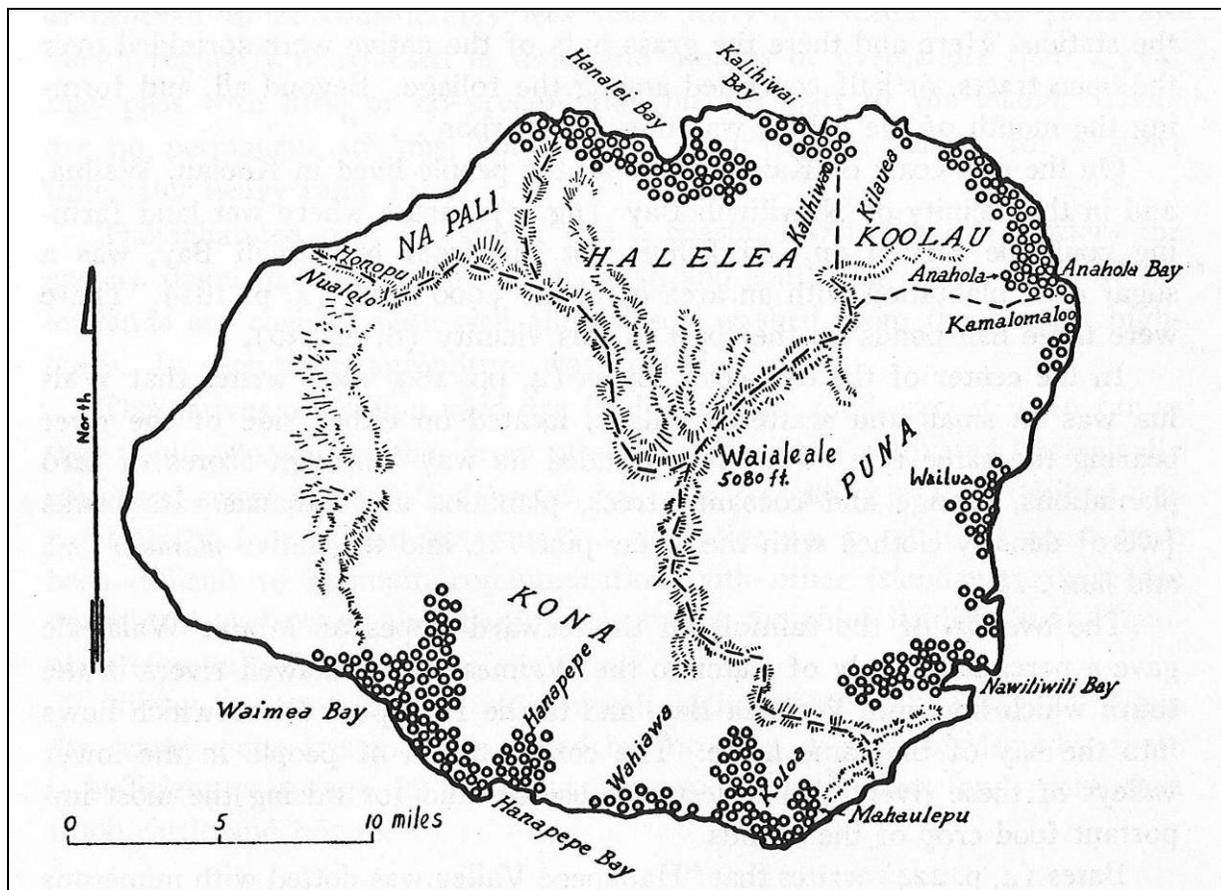


Figure 10. Population estimates for Kaua'i generated by Coulter (1931), each symbol represents 50 people; note densely settled area at Nawiliwili Bay, with a modest population (150 people) are the coastal boundary between Hanamā'ulu and Kalapakī

There are four claims in the back bay area of Hanamā'ulu and two claims for house lots (LCA 3650 and 3653) near the beach, south of Kapule Highway. Most of the *kuleana* claims for Hanamā'ulu are located in lands that have been under sugar cane cultivation for much of the 20th century; occasionally, traditional artifacts can still be found in the cane fields.

3.6.1.2 Kalapakī

In Kalapakī Ahupua'a, *kalo* (taro) *lo'i* claims were on the north side of Nāwiliwili River (the *wauke* land in Claim 3907 on the south side of the river being the sole exception) and along the smaller drainages of Kalapakī and Koena'awa, where there were also reportedly springs. Two streams, Koena'awa-nui and Koena'awa-iki, were also identified in the claims, but neither is named on current maps. These two streams, however, can be seen in an undated photograph on file at the Kaua'i Museum (see Figure 6, above).

Most Kalapakī claimants lived at the shore in the *kulana kauhale*, or village, of Kalapakī, located near Nāwiliwili Bay. Several claimants describe their village house lots in relation to the

fishponds of Koena'awa (Koena'awai-nui and Koena'awa-iki). There is also a description of the *muliwai*, or estuary, of Koena'awa-nui.

Claim 3640 mentions a footpath for the *'ili* of Limawela near the shore at the boundary between Hanamā'ulu and Kalapakī. These documents therefore indicate a north/south path along the shoreline, and other paths going inland from the shore, which is a traditional transit pattern for Kaua'i *ahupua'a*.

Paulo Kanoa, Governor of Kaua'i at the time of the Māhele, claimed both the *ahupua'a* of Hanamā'ulu and Kalapakī but was awarded neither. Instead, Victoria Kamāmalu was awarded both *ahupua'a* under LCA (Land Commission Award) No. 7713:2. A portion of this award (7713:2 part 7) includes land within the present project area. Following the death of Victoria Kamāmalu in 1866, Princess Ruth Ke'elikōlani inherited her lands. In 1870, Ke'elikōlani sold large portions of her Kalapakī and Līhu'e lands to William Hyde Rice of Lihue Plantation. In addition, in 1870, Paul Isenberg purchased the *ahupua'a* of Hanamā'ulu from J.O. Dominis, which includes the land of the present airport area. William Hyde Rice made subsequent land purchases from Princess Ruth in 1879:

William Hyde Rice, who already had his own home on the hill east of the mill, bought a large makai section of the ahupuaa of Kalapaki from Princess Ruth in 1879 and there conducted the Lihue Ranch. In later years he sold most of this land to the plantation. (Damon 1931:747)

The large tracts of inland areas (*kula*), not in the river valleys or at the shore, are not described in the claims but were probably in use. This *kula* land at the time of the Māhele belonged to Victoria Kamāmalu. Land use is not elaborated in her claims for Hanamā'ulu or Kalapakī. Traditional *kula* resources for all claimants would have been medicines, herbs, construction materials such as *pili* grass and trees for building houses, canoes, and perhaps lithic materials for tools. Sweet potatoes and other dryland crops, such as *wauke*, probably were cultivated in patches throughout the area at one time or another.

3.6.1.3 Nāwiliwili

Victoria Kamāmalu was awarded over two thousand acres of Nāwiliwili Ahupua'a (LCA 7713), along with much of Niūmalu, Ha'ikū and Kīpū, as well as Kalapakī and Hanamā'ulu. In addition to Kamamalu's large award at Nāwiliwili, there were many smaller *kuleana* awards. According to Hammatt and Creed (1993):

Within the valley floor and adjacent to the alluvial plain [in Nāwiliwili] ... are 14 land Commission Awards for which there are testimonies available in the Land Commission records ... The awards vary in size between one to two acres and are generally around one acre. The majority of land recorded is for *lo'i* (wetland agriculture) but *kula* (dryland plots) are present as are a few houselots.

In all there are 54 *lo'i* recorded. Each award is generally two to three *lo'i* plots. The largest award comprised eight *lo'i*; a single award consisted of one *lo'i*. All awards contained *lo'i* and nine of the fifteen total awards had *kula* lots. Without exception, the nine awards containing *kula* mention only one *kula* per award. This is of interest because it shows that the alluvial plain was not entirely dedicated to

wetland planting and that a small *kula* lot was essential for subsistence agriculture.

Some awards at Nāwiliwili mention houselots along the shoreline.

3.6.2 Commercial Sugar Cane Agriculture

As a direct result of the availability of large tracts of land for sale during the *Māhele*, in 1849, Lihue Plantation “was established on the site Kaikio‘ewa had chosen, and the cluster of homes and stores around it was the start of the town of Līhu‘e.” (Donohugh 2001:94). The plantation was started by Henry A. Pierce, Judge Wm. Little Lee, chairman of the Land Commission, and Charles Reed Bishop, doing business as Henry A Pierce and Company (Damon 1931). The first 3,000 acres were purchased in Nāwiliwili and an additional 300 acres were purchased in Ahukini in 1866. The Līhu‘e Plantation became the most modern plantation at that time in all Hawai‘i. It featured a steam-powered mill built in 1853, the first use of steam power on a Hawaiian sugar plantation, and the ten-mile-long Hanamā‘ulu Ditch built in 1856 by plantation manager William H. Rice, the first large-scale irrigation project for any of the sugar plantations (Moffatt and Fitzpatrick 1995:103). Dorrance and Morgan (2000:28) provide a slightly different list of achievements for Līhu‘e Plantation: “The first irrigation ditch in Hawai‘i was dug in 1857 [at Līhu‘e], and in 1859 the first steam engine in a Hawai‘i mill was installed at Lihue Plantation.”

The residential and administrative heart of Līhu‘e Plantation was located in the western portion of the subject project area, now downtown Līhu‘e, Kaua‘i’s political center and most developed area. There are many documentary resources about the history of commercial sugar cane in Līhu‘e (see, e.g., the Kaua‘i Museum’s website, <http://www.kauaimuseum.org>). Dorrance and Morgan (2000) have summarized highlights of the history of both the Līhu‘e and Hanamā‘ulu Plantations (see pp. 28-29), and there are other, more detailed histories of these operations (e.g., Condé and Best 1973; Wilcox 1996; Donohugh 2001).

The success of the Līhu‘e Plantation allowed it to continue to expand. When the owner of Hanama‘ulu Ahupua‘a, Victoria Kamāmalu, died in 1870, all 9,177 acres in the *ahupua‘a* were purchased by Paul Isenberg, the manager of Līhu‘e Plantation from 1862-1878 (Damon 1931:742-747). By 1870, the plantation owned 17,000 acres in Hanamā‘ulu. A total of 30,000 leased acres in Wailua were later added in 1878. Līhu‘e Plantation built a second mill in 1877, north and west of the present airport, recorded in an 1885 map of Hanamā‘ulu Bay by Lt. George G. Jackson. This mill operated until 1920, when it was converted into housing for laborers.

3.6.3 Changing District Names

The traditional districts, or *moku*, of Kaua‘i were replaced in the middle to latter part of the 19th century by modern political-district names (Figure 11). Given its economic importance to the island, Līhu‘e became the modern district name, as described by Rice:

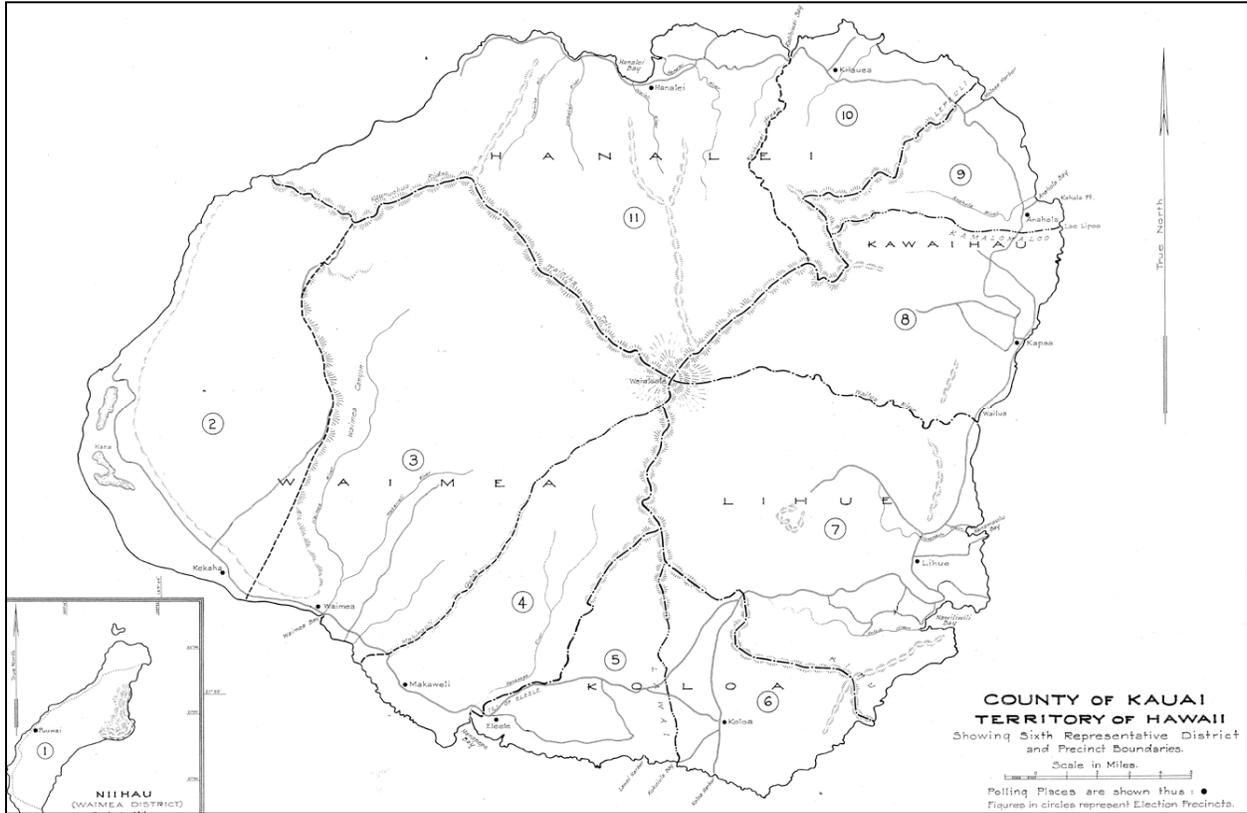


Figure 11. 1936 map of the political districts of the County of Kaua'i, Territory of Hawai'i

The name, Lihue, applied in a larger sense, included the districts of what are now Kawaihau and Lihue, reaching from Anahola to the Gap, being made so by law in about the year 1861, according to early court records, but some years later divided into the present two districts. The large district was also known as the Puna district, and is found on early maps as such. It was August thirteenth, 1880, that the district was divided into two, by act of Legislature with King Kalākaua's signature. . . . Lihue, in a local sense, and from which the name of the district was derived meant only that little portion of land upon which the present village, as consisting of bank, post office and store, now stands. (Rice 1914:46)

3.6.4 Later 19th century

Māhele records indicate that taro continued to be cultivated in Nāwiliwili Valley through the middle 19th century. However, later in that century, much of the taro lands in Nāwiliwili, as in other wetland regions of the Hawaiian Islands, were converted to rice cultivation. This shift was, dictated by changes in the ethnic make-up of the islands' population and economic demands. Little is known of the rice industry in Nāwiliwili; however, an 1881 map of Nāwiliwili Bay shows the entire *makai* portion of Nāwiliwili Valley under rice cultivation. Early 20th century photographs in the Bishop Museum Archives show large rice terraces within the valley. Rice was also grown in the flatlands *makai* of the *pali* (cliff) of Kuhiau.

According to Dorrance and Morgan (2000:24-25), there were at least four different major sugar cane operations (i.e., mills and / or plantations) in the near vicinity of the subject project area during the later 19th century, including the Lihue and Hanamaulu Plantations (founded 1870, closed 1898) as well as the Hanamaulu Mill Company (founded 1870, closed 1880) and Charles L. L'Orange (founded 1882, closed 1888).

In 1870, the Lihue Plantation Company bought up approximately 17,000 acres of undeveloped land in Hanamā'ulu, which were then used to grow sugar cane and to capture and deliver water to both plantations. Later, in 1870, George N. Wilcox started the first sugar cane plantation in Hanamā'ulu, the Hanamaulu Plantation (Dorrance and Morgan 2000). In 1898, Hanamaulu Plantation was merged into Lihue Plantation.

Historic maps show most of the subject project area, especially the current airport, was not yet in commercial sugar cane agriculture by the late 19th century (Figure 12), but this would change by the early 20th century when nearly the entire subject project area was plowed under for cane.

3.7 Twentieth Century

3.7.1 Lihue Plantation

Lihue Plantation remained a vibrant and successful commercial operation throughout most of the 20th century, in part, because of a continued interest in technological innovation (Figure 13). For example, in 1912, Lihue Plantation installed two 240-kilowatt generators above the cane fields on the slopes of Kilohana Crater, becoming one of the first hydroelectric power producers (along with Kekaha, Kaua'i) in the Hawaiian Islands (Dorrance and Morgan 2000). Lihue Plantation worked hard to reduce expenses and stay solvent in an increasingly challenging market. By 1987 the plantation was selling 60-78% of its hydroelectric power back to Kaua'i.

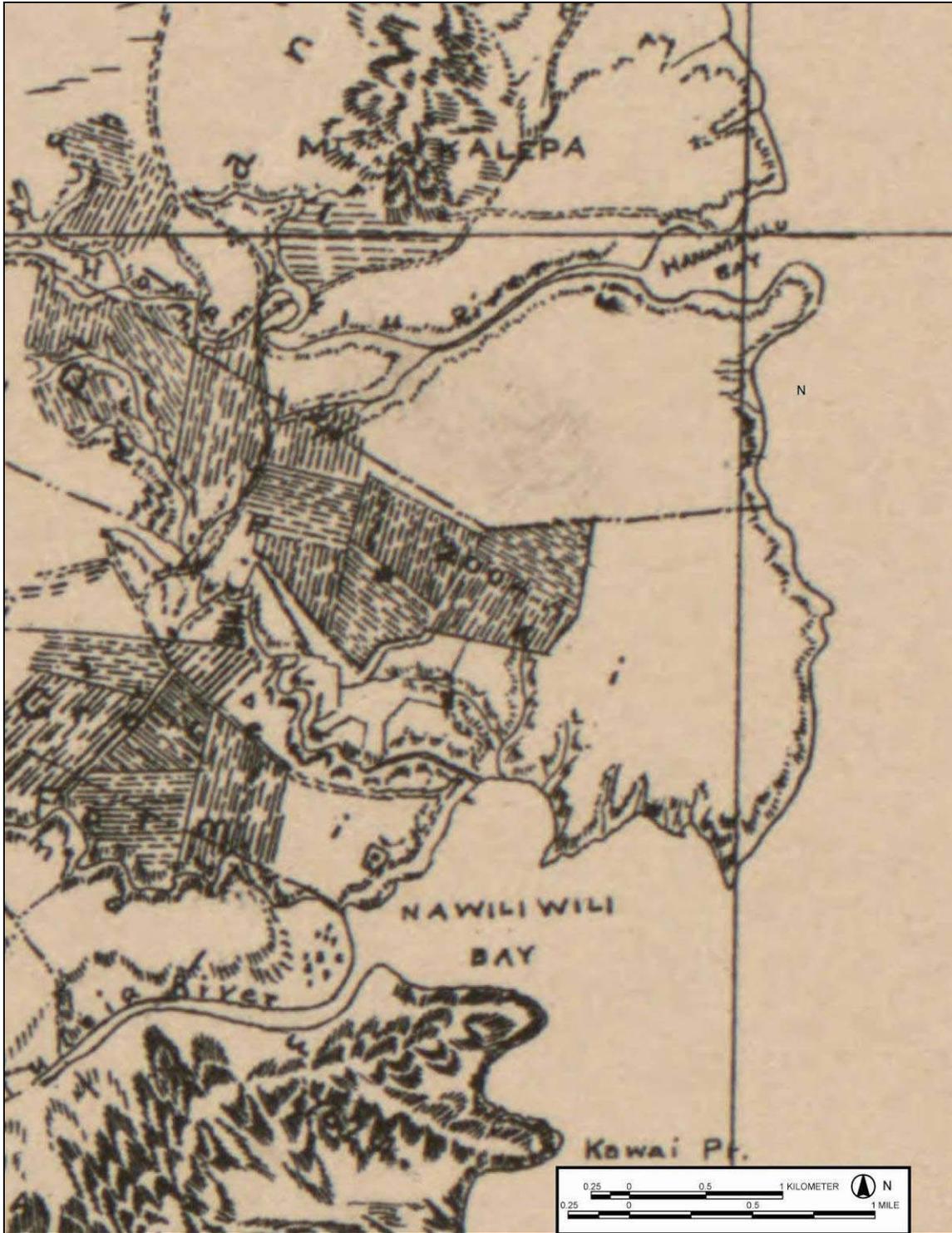


Figure 12. Detail of late 19th century Hawaiian Government Survey map clearly showing the general footprint area of the proposed project not yet under cultivation of sugar cane

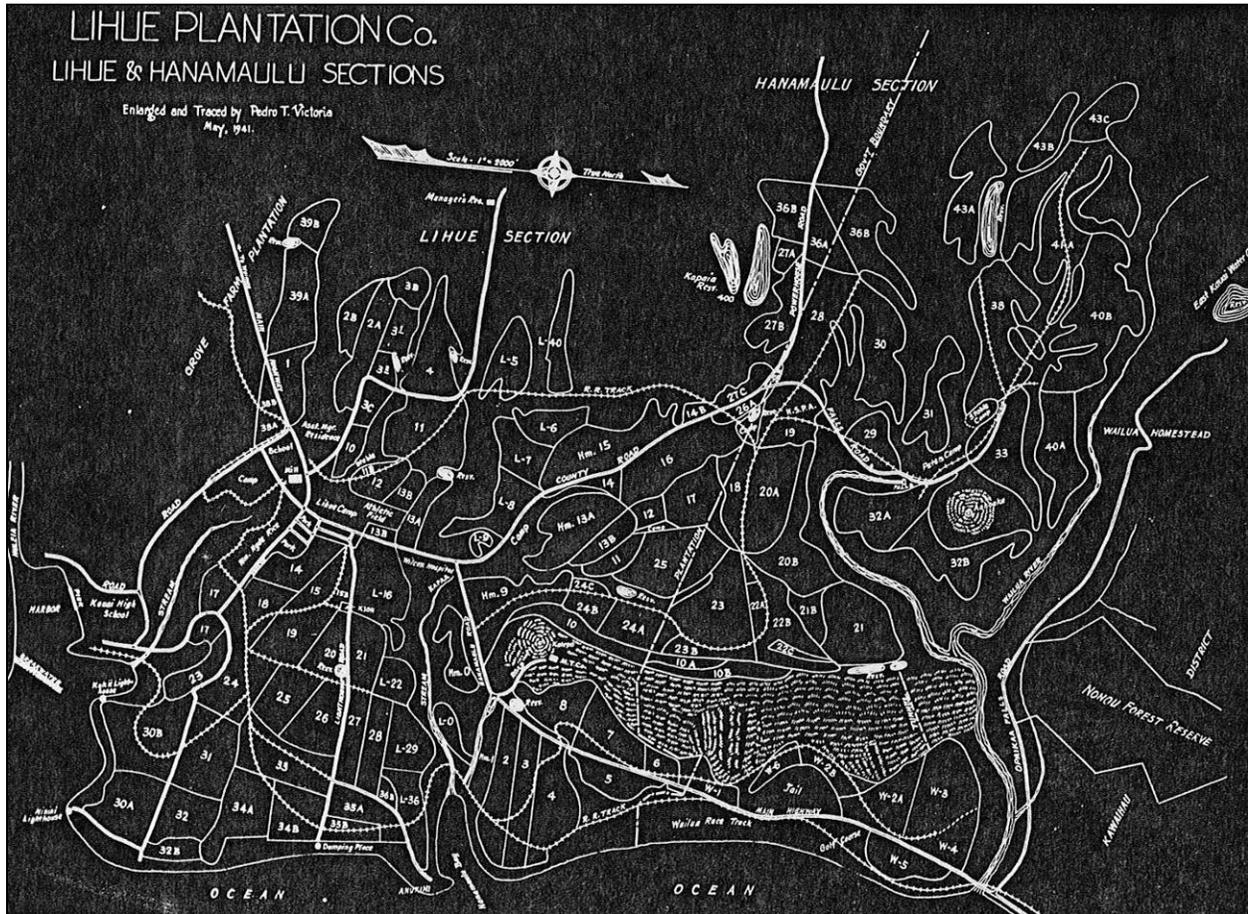


Figure 13. Lihue Plantation Co. in 1941 with subject project area in lower left-hand portion of the image (Condé and Best 1973:168)

Commercial sugar cane agriculture continued in Līhu'e until 2000, when the Lihue Plantation and the Kekaha Sugar Co. finally shut down, terminating approximately 400 workers. The nearby Kipu Plantation, founded in 1907, operated until 1942 (Dorrance and Morgan 2000).

There are many first hand recollections about life in the early 20th century plantation days of Līhu'e, including extensive documentary archives maintained by the historical museum at Grove Farm Homestead.

3.7.2 Ahukini Port and Village

Hanamā'ulu Sugar Plantation originally had its own wharf at Kou on the north side of Hanamā'ulu Bay. This became the first wharf and boat landing area where people and cargo were ferried out to waiting ships. The original landing was built sometime before 1885, and was only a small wooden wharf on the beach with a "Sugar house" which is noted in Jackson's field notes and maps (1881). Sometime prior to 1906, shipping operations relocated to the south side of the bay at Ahukini Landing. Newspaper accounts indicate Ahukini Landing was refurbished between 1906 and 1909. However as sugar production increased, shipping vessels became larger and drew more water, which required a deeper harbor where ships could dock and unload passengers and cargo. In partial response to this need, Ahukini Terminal and Railway Company (AT&R Co.) began operations in 1921. A 1927 Sanborn Fire Insurance map shows the buildings of the AT&R Co. as well as Standard Oil Company, and multi-family residential units for terminal workers present at Ahukini landing (Figure 14 and Figure 15).

A summary of information in *Garden Island* newspaper articles from 1919 to 1929 document the details of urban growth at Ahukini and the opening of nearby Līhu'e Airport (adapted from Creed et al. 1999):

1919 Only a small wood wharf at Ahukini [Landing] in Hanamā'ulu Bay. The Lihue Plantation announces plans to turn it into deep draft harbor at a cost of \$400,000-\$500,000 (*Garden Island* 1/21/19; 1:5).

1920 Ahukini Terminal and Railway Co. (AT&R Co.) are organized under American Factors (which also owns Lihue Plantation). The terminal will handle shipments of sugar, pine and incoming shipments of general merchandise from West Coast direct, as well as inter-island shipments. American Factors will build a rail line linking Ahukini Terminal to Kapa'a, Kealia, and Anahola. Work started on dock facility and rail line (*Garden Island* 7/13/20; 1:5).

1921 U.S. Government announces federal aid to turn Nāwiliwili into a deep-draft harbor. It is rumored that AT&R will abandon Ahukini project because of this (the rumor proved to be false) (*Garden Island* 1/18/21; 1:4).

1922 the dock facility is complete and work is on-going on access road and breakwater. Dredging has also started. Construction begins at Nāwiliwili Harbor (*Garden Island* 10/31/22; 1:3).

1924 Standard Oil opens gas, oil, and kerosene storage facility at Ahukini to server east Kaua'i (*Garden Island* 6/24/24; 1:3).

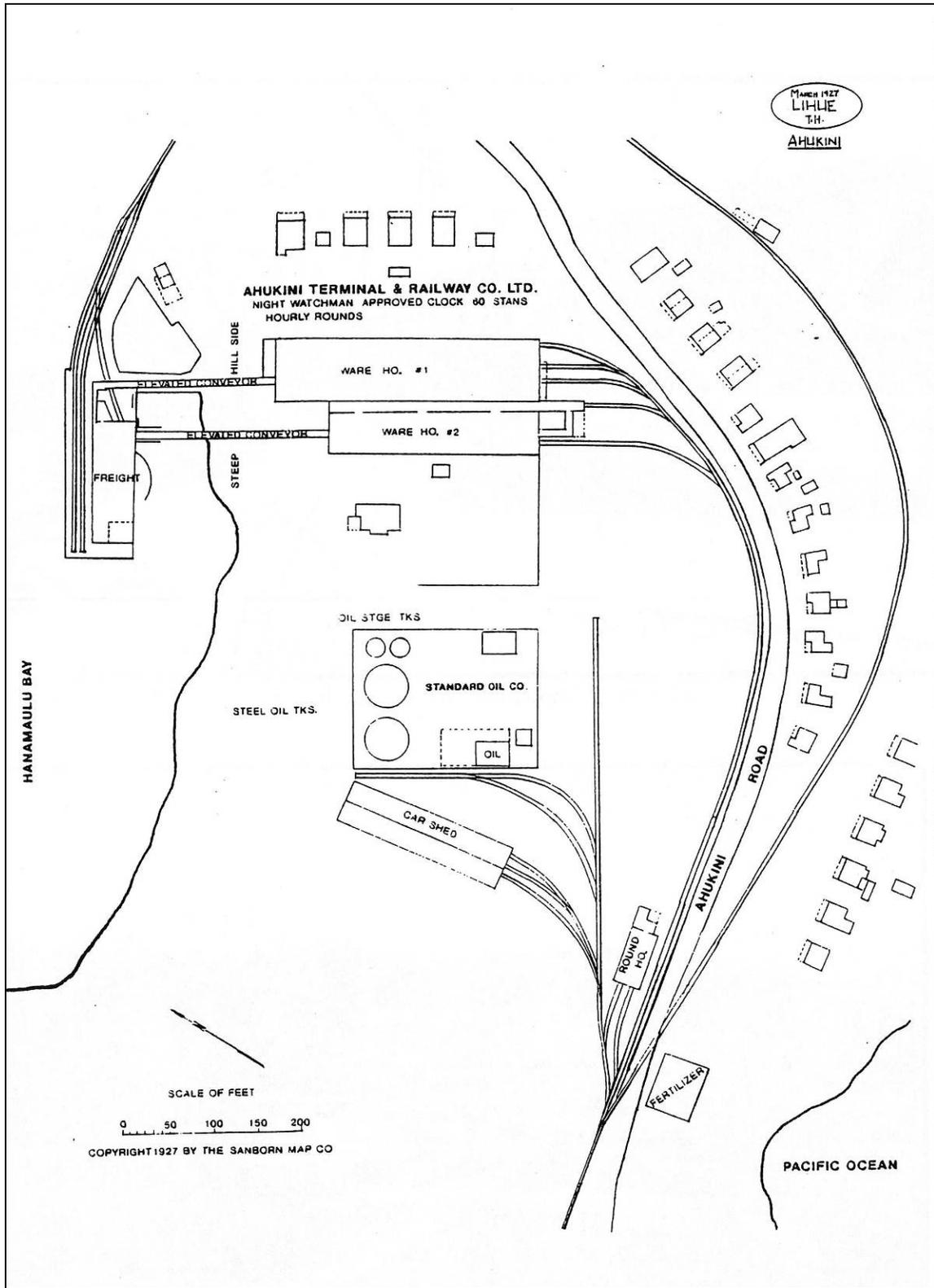


Figure 14. 1927 Sanborn Fire Insurance map showing Ahukini Landing

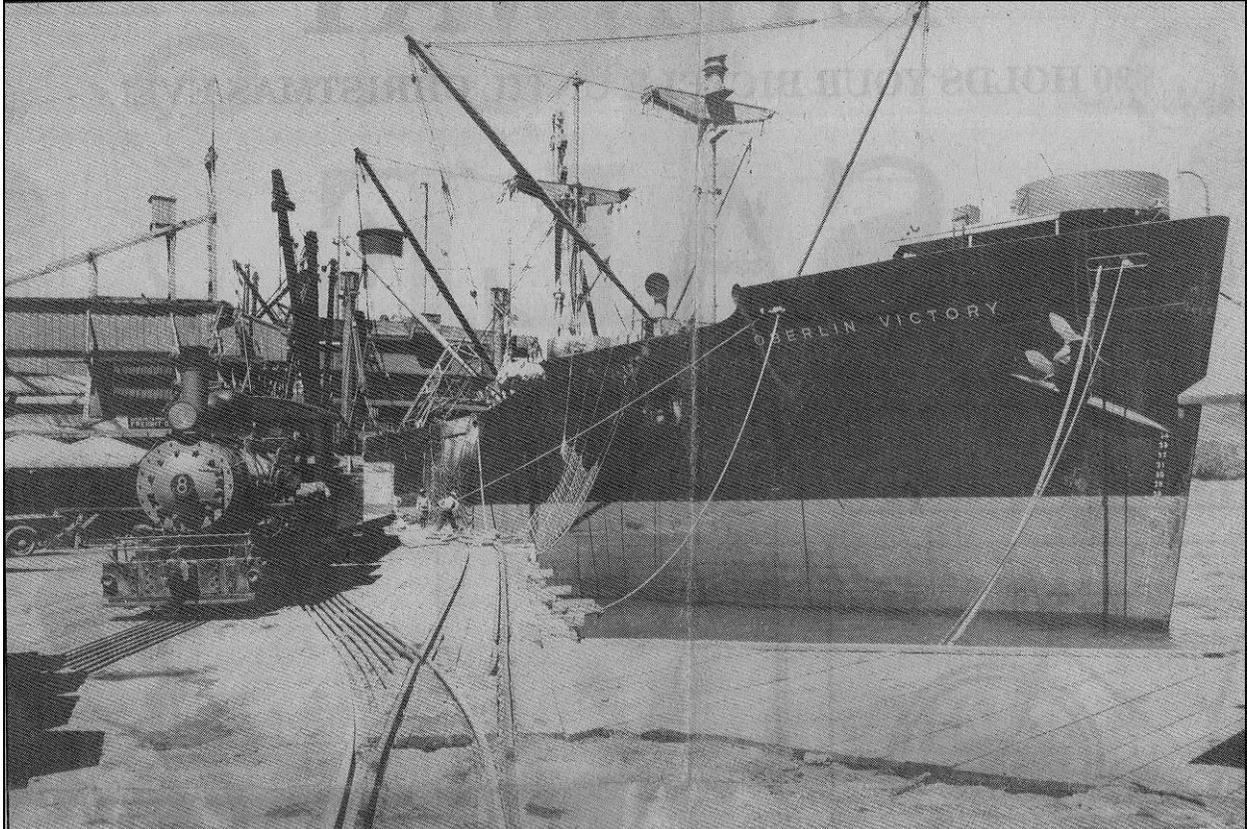


Figure 15. Ahukini port in 1946 (from Baptiste 1993a)

1928 First shipment of goods direct from West Coast arrives at Ahukini (*Garden Island* 2/28/28; 1:1).

1929 Territorial Government urges AT&R to move operations to the new harbor under construction at Nāwiliwili. AT&R says it will not move unless the government pays \$600,000 in moving expenses (*Garden Island* 12/24/29; 1:3).

1950 Līhu'e Airport opens (*Garden Island* 1/10/50; 1:3 & 11:1).

The *Garden Island* newspaper devoted two issues (November 24 and 26, 1993) to the memories of Ahukini Camp and Landing. Article author Linda Baptiste wrote that “In it’s day Ahukini was once Kauai’s most modern first-class wharf. It was the first port on Kauai to have pier-to-ship facilities.” Ahukini Landing is shown in several photos from this memorial issue (see Figure 15). It was abandoned as a shipping facility in 1950 and the state built a catwalk where people could fish. Mullet and *akule* are the main catch. (*Garden Island* 11/24/93: A1).

The commercial cultivation of sugar was the impetus for the construction of Ahukini Landing and sugar was always a major shipping item; however, mixed inter-island shipping expanded the role of Ahukini Landing. Standard Oil had tanks at the terminal and supplied a range of petroleum products to the east side of the island. In 1939 both Ahukini and Port Allen longshore Stevedores went on strike for a year to try to improve their way of life. Striking works were not welcome in company housing and approximately 100 people moved to the old skating rink in Nāwiliwili.

At the height of it’s use, Ahukini Landing had nearly 200 residents. Robert Yoshida, a former Ahukini resident interviewed for the 1993 memorial articles, recalled that the Stevedores strike was the beginning of the Democratic Party on Kaua‘i. He also recalled that during WWII Ahukini was a prosperous community and described an idyllic life at the camp: “coconut groves, fish. We used to fish all the time. We caught little fish with our bamboo poles. We’d stand around and crabs clawing at our feet.”

Former Ahukini residents say, that since moving away, they have never again experienced such a rare and special feeling of community. It’s decaying skeleton of a pier, once the most modern on the island, is now a popular fishing spot (*Garden Island* 10/26/93:A2).

Captain John “Jack” William Bertrand was Ahukini’s one and only Port Captain. In 1993 the remains of the Bertrand family home and cottage were, “the only homes left standing in Ahukini. Donna Mahas, owner of Master Works Auto body & Paint now lives in the Bertrand’s former house. It is situated overlooking the pier ruins and Hanamaulu Bay” (*Garden Island* 11/26/93: A2).

Marie R. Bertrand, 92, related that her family had first lived in a house between the oil tanks but that was not a good locations so, in 1934, the “Honolulu Company” that owned the land, allowed them to build a new house. She designed this house with a Kaua‘i architect named Maeda (Personal communication with Victoria Creed 1999).

3.7.3 The Development of Nāwiliwili Harbor

Nāwiliwili Bay originally had two landings: one for private use on the north side and one for government use on the west side. The bay was largely unprotected and the trade winds caused large waves in the bay which made landings difficult. Despite this factor, Nāwiliwili Bay was the closest accessible landing to Honolulu and was used by most commercial transports (Dean 1991: 139). As plantations produced more cane, thereby shipping more product, the need for a breakwater and deeper harbor became more apparent. A military assessment in the early 1900s by the Army Corp of Engineers also confirmed this need (Dorrance 1998: 157-158). The federal River and Harbor Act of March 2, 1919 authorized the construction of a modern harbor at Nāwiliwili. Some aspects of the construction phases of the harbor can be seen in historic maps and aerial photographs (see Figure 14, Figure 16-Figure 18).

The selection of Nāwiliwili as the harbor of the future on Kaua'i was preceded by a year's worth of debate between advocates of Hanapēpē and Nāwiliwili. The specifications for the harbor included support from local government and business interests:

Upon completion of a rubble-mound breakwater 2,450 feet long along the reef dividing the inner and outer harbors, the entrance channel would be dredged to a depth of 35 feet, a minimum width of 400 feet, and a length of 2,400 feet. Also included in the estimated cost of \$1,086,000 was a harbor basin 35 feet deep, 1,025 feet wide, and averaging 2,000 feet in length. The same act provided an initial appropriation of \$250,000 for construction of the harbor. Local interests were to assure eventual railroad connections between Nāwiliwili and the southern part of the island 'in reasonable time,' while the Territory of Hawaii or the County of Kauai was to give the Secretary of War \$200,000 toward the project. (van Hoften 1970: 12)

The dredged material would be used as fill for the proposed wharf areas. Construction of the breakwater, the initial phase of the harbor project, began in October 1921.

By 1924, a total of 1,454 feet of breakwater had been set in place. However, dredging within the now semi-protected bay could not begin until the Territorial Legislature appropriated the \$200,000 promised to the project. Action by the legislature was delayed when the sugar companies on west Kaua'i – continuing to press for Port Allen at Hanapēpē as the island's major harbor facility – threatened to boycott the Nāwiliwili harbor after its completion. The Legislature finally approved its share of the funding in 1925, and the breakwater was completed in March 1926. Development of the harbor continued apace as:

...the Territory took over the Federal camp and equipment and began construction of a concrete wharf. As soon as the Government dredge A. Mackenzie finished [dredge work] at Hilo she began work at Nāwiliwili in fiscal year 1929, and dredging was completed in July 1930. The official opening of the \$1.3 million harbor on 12 July inaugurated an entrance channel 600 feet wide, 2,400 feet long, and 35 feet deep, a harbor basin 1,100 feet wide, 2,000 feet long, and 35 feet deep; and a rubblemound breakwater 2,150 feet long. (van Hoften 1970:18–19).

Construction of the wharf facilities continued throughout the 1930s.

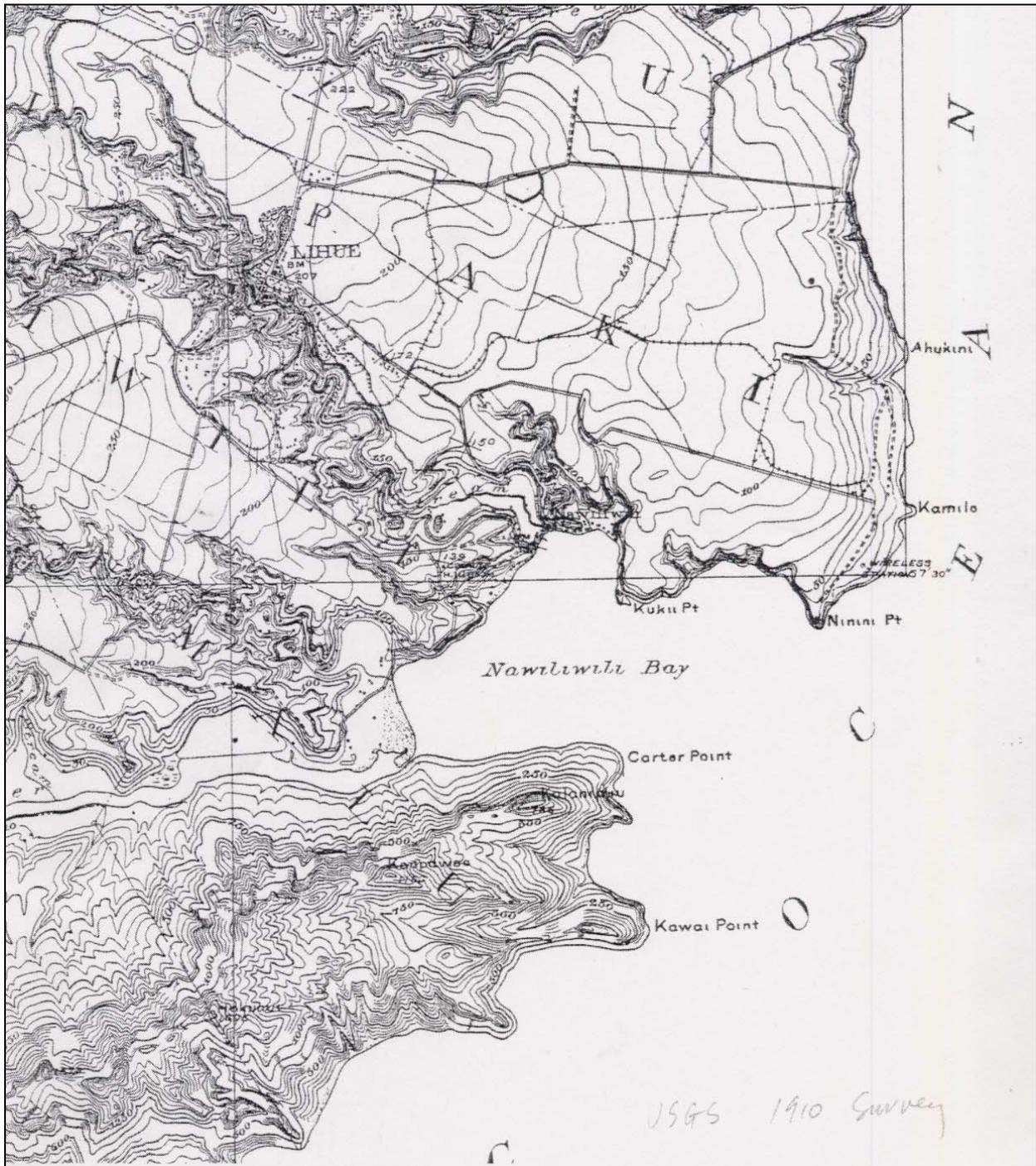


Figure 16. Portion of 1910 US Geological Survey map of Nāwiliwili



Figure 17. 1924 photograph showing Nāwiliwili Bay before construction of the harbor facility on the north side of the bay (Bishop Museum Archives)



Figure 18. Circa 1930 photograph showing Nāwiliwili Harbor under construction (Bishop Museum Archives)

Historic maps and photographs document Nāwiliwili Bay before and after the construction of the harbor. A U.S. Geological Survey map of 1910 shows the original configuration of the shoreline at Nāwiliwili Bay before the construction of the harbor (see Figure 16). The early stages of the breakwater construction are evident in an aerial photograph taken on July 4, 1924 (see Figure 17), in which the end of the newly constructed breakwater is visible in the left-central portion of the photograph. Construction of the harbor facility on the north side of the bay had not yet begun by this time.

Another aerial photograph from c. 1930 shows the continued development of the harbor (see Figure 18). By this time, the filling-in for the harbor had not been completed; the area of the current pier facility is still open water; the land behind the constructed jetty was built up by imported fill. More recent maps of the harbor, compared with the 1910 map, reveal that the modern pier area is located entirely upon a 20th century landfill.

3.7.4 Nāwiliwili Harbor Light

The site for the Nāwiliwili Harbor Light was originally leased by the Hawaiian Government from the Lihue Plantation in 1897. Original construction of the tower was a 40 ft high open frame with a lamp room on top. The original lamp was 70 ft above sea level and could be seen as far as 10 miles out to sea. A small caretaker's house was also built on site (Dean 1991: 139).

By 1906 the Lighthouse Board had taken over operations of the Nāwiliwili Harbor Light and the old tower was torn down and rebuilt with an upgraded lense, though the structure was shorter. A more permanent lighthouse structure and caretakers residence was completed in 1933. The U. S. Coastguard took over maintenance and upkeep of the lighthouse in 1939 (Dean 1991). The light was fully automated in 1953, however the lighthouse attendant was kept in place and was responsible for the maintenance of eight lighthouses on Kaua'i (Dean 1991: 148). The caretaker's residence and associated outbuilding were demolished some time after 1967.

3.7.5 World War II

The bombing of Pearl Harbor on December 7, 1941 effectively pulled the U.S. into World War II. However, strategic defense of the Hawaiian Islands was considered, and to some degree, prepared for, well in advance of the Japanese air strike. As previously discussed, the harbor at Nāwiliwili Bay was dredged to allow for large, deep water vessels. The Army Corp of Engineers also effectively connected railroads originally built by the sugar can plantations for future military use. The Army also planned to use Kaua'i as a center of truck produce in the event that the Hawaiian Islands were cut off from the mainland; the connection of the railroads would serve to aid in the transportation of food supplies. Several small military installations were constructed including Burns Field and later Barking Sands. By the middle of 1941 Kaua'i had a Military District, however there were less than 1,000 military personnel stationed full-time on the island. After the bombing of Pearl Harbor, an additional three attachments were sent to protect the harbors, while the Hawai'i National Guard was ordered to "prevent civil disturbances, protect landing fields used by our troops and resist landing attacks..." (Dorrance 1998: 163).

Only two 75-mm field guns were in place on the island when a Japanese submarine surfaced just off the eastern coast on the night of December 30, 1941 and fired on Nāwiliwili Harbor. Most of the 15 rounds deployed were faulty and minimal damage was incurred, however, this

action brought to light the need for better defenses on the outer islands (Bennett 2003; Dorrance 1998). As a result of the attack, four 155-mm GPF guns were dispatched to Kaua'i and emplaced near Nāwiliwili and Ahukini Harbors. Additionally, more guns and ammunition were made available by the Navy to outer islands in early 1942. A total of four 7-inch guns were shipped to Kaua'i and casemates for two of them were built on the coast line between Nāwiliwili and Ahukini Harbors. The other two guns were located further south, near Port Allen and Burns Field (Bennett 2003: 71; Dorrance 1998:166). The guns were serviced by members of the Battery D, 55th Coast Artillery (Dorrance 1998:166).

In April 1942, there were approximately 7,000 servicemen stationed in Kaua'i. However, the military presence dwindled after the Battle of Midway in June 1942 proved to be the turning point in the war. Military personnel continued to train for jungle warfare in Kaua'i through 1943.

3.7.6 Līhu'e Airport

Līhu'e Airport was opened in 1949 at an original cost of almost \$679,000. It occupies approximately 850 acres of former sugar cane fields on the east side of Kaua'i just outside of Līhu'e town. A freight terminal, maintenance shop, and fully automated emergency generating system were added in 1951. Because of the dramatic increase in tourist traffic, the runways were lengthened and the terminal was enlarged in the mid-1950s. A restaurant building and parking lot were added by the end of the 1950s. An air traffic control tower, a second runway, fencing around the perimeter of the runways, and a new terminal were added in the 1970s. The airport was again modernized in the 1980s with a new instrument landing system and upgraded facilities that allowed for aircraft approach from the water thereby reducing aircraft noise pollution in urban areas. The airport was continually upgraded to allow for advanced technology, more runways, and a helicopter pad through the 1990s and into the 21st century. Līhu'e airport continues to serve as Kaua'i's only airport and is serviced by a number of large international airlines as well as regional carriers (www.hawaii.gov).

3.8 Previous Archaeological Research

3.8.1 Overview

This section focuses on the most relevant archaeological research in and directly around the general footprint area of the proposed project. Results from previous studies of coastal and near coastal areas of Hanamā'ulu, Kalapakī, and Nāwiliwili are briefly summarized. This is followed by a detailed treatment of prior research and results from the shoreline at Kalapakī and Hanamā'ulu (south of the Hanamā'ulu Stream), immediately east (*makai*) of the airport. Collectively, these observations provide some expectations regarding the types of cultural and historic resources that may be located in the subject project area.

The shoreline at Kalapakī and Hanamā'ulu is the most sensitive archaeological area; most of the rest of the general footprint area has been substantially modified by commercial sugar cane operations, the development of Līhu'e Town, Nāwiliwili Harbor, Ahukini port, and the airport, the Marriott resort and golf course, and other development. Except for its shoreline segment—which runs from Ahukini Landing (i.e., south-side of Hanamā'ulu Bay) to Ninini Point (north side of Nāwiliwili Bay), the proposed bike path route mostly travels along existing rights-of-way

whose subsurface sediments have already been substantially disturbed. There are no extant *heiau* or reconstructions of *heiau* in the general footprint area of the proposed footprint, despite the fact that at least three large shrines were once located along the coast from Ahukini to Kūki'i.

This archaeological review is based on a prior CSH report documenting the results of an archaeological inventory survey of the proposed impacts of improvements to Līhu'e Airport (Bell et al. 2006); and other original source materials from archaeological studies of the specific coastal area of concern (Hammatt 1988, 1990; Creed et al. 1999).

Figure 19 shows prior archaeological investigations in the general footprint area of the proposed project. Figure 20 shows historic properties that have been documented in this area as a result of these studies. Table 3 summarizes previous archaeological studies in and around the project area, and Table 4 summarizes archaeological sites documented as a result of these studies. These data show there are at least 33 known cultural and historic sites of interest in this area; 26 of these are historic properties listed on the State Inventory of Historic Properties (SIHP); the other seven sites of interest are cemeteries not listed on the SIHP.

3.8.2 Early Documentation of *Heiau*

Thomas G. Thrum (1907), publisher of the *Hawaiian Almanac*, gathered lists of *heiau* on all the islands; and reported five from the *ahupua'a* of Hanamā'ulu, Kalapakī and Nāwiliwili:

1. Ninini, Kalapakī, near site of Nāwiliwili light house; described as destroyed (SIHP No. 100)
2. Ahukini, Kalapakī; described as a *heiau* of medium size, with some foundation stones in evidence at the time of Thrum's work (SIHP No. 101)
3. Pohakoelele, Kalapakī; described as a medium-sized *heiau*; destroyed by the time of Thrum's survey (no site number)
4. Kalauokamanu, Hanamā'ulu; described as a large walled *heiau* that stood above the present mill; destroyed around 1855- of *po'okanaka* (sacrificial) class (SIHP No. 102)
5. Kuhiau, Nāwiliwili, near site of court house - a large paved *heiau*, whose enclosure covered an area of about four acres: long since destroyed (SIHP No. 99). The rock Paukini, now separate from but formerly connected with the shore, was where the *kahuna* (priest) lived

The first comprehensive archaeological survey of Kaua'i was undertaken by Wendell Bennett in the late 1920s and published by the Bishop Museum in 1931. Bennett used Thrum's list for reference and documented many additional (mostly non-*heiau*) sites. Bennett listed two *heiau* for Hanamā'ulu Ahupua'a and one for Kalapakī (both described as "destroyed"). He also noted sand-dune burials (SIHP No. 103) towards the Wailua River (Figure 21). Bennett repeats the descriptions provided by Thrum for the "destroyed" Sites 100–102, and adds the following:

Site 103. Dune burials. In the sand dunes that run along the shore halfway between Hanamā'ulu and Wailua River are many burials. (Bennett 1931:125)

Paukini Rock, a *heiau* or priest's house now under water in Nawiliwili harbor [this site is now designated SIHP No. 50-30-11-1999] (Bennett 1931:48)

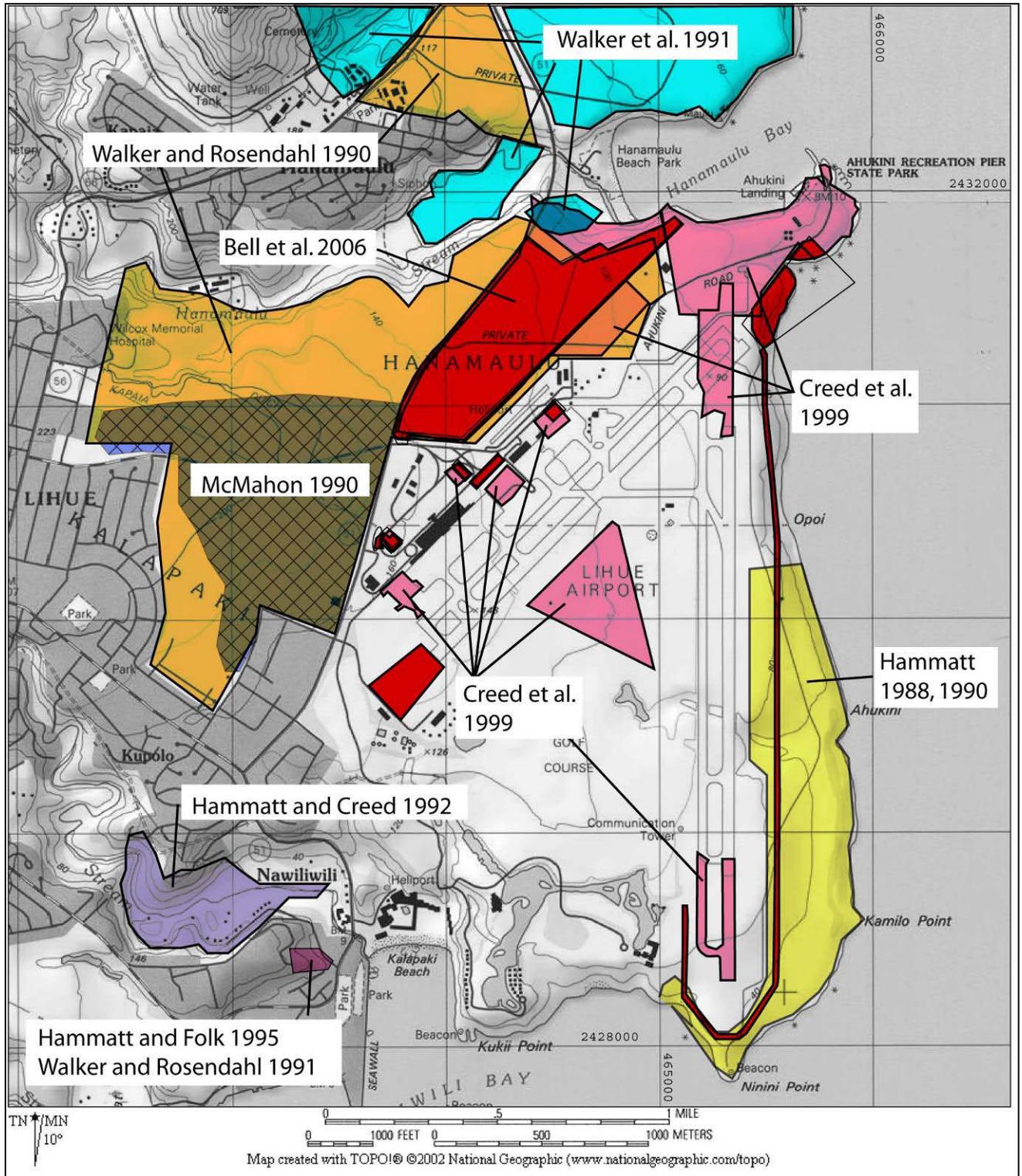


Figure 19. Map of the Līhu'e area showing the location of previous archaeological projects

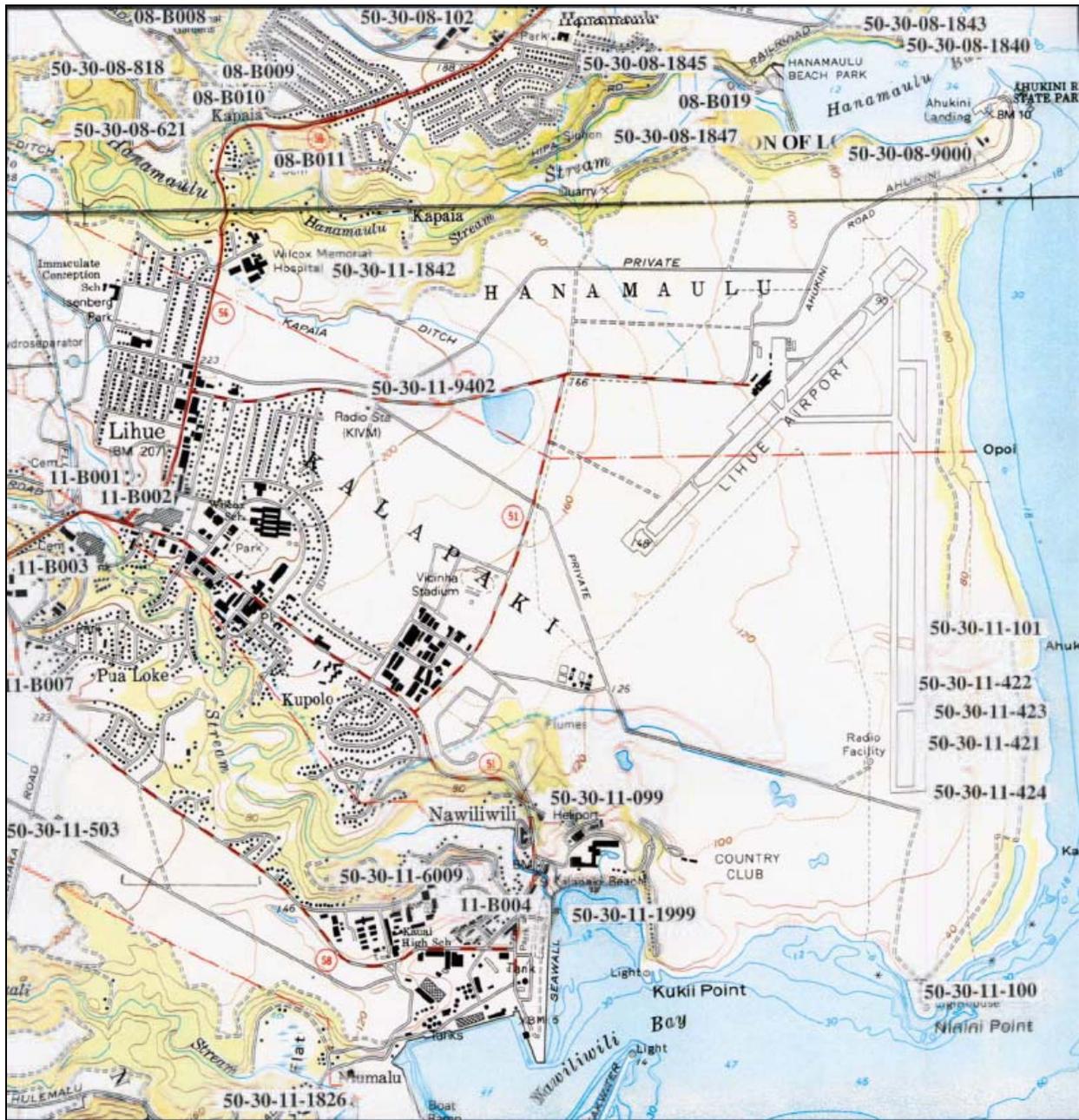


Figure 20. Historical and cultural sites of interest within and near the subject project area (projected on portions of Līhu‘e and Kapa‘a U.S. Geological Survey 7.5-minute topographic quadrangle maps)

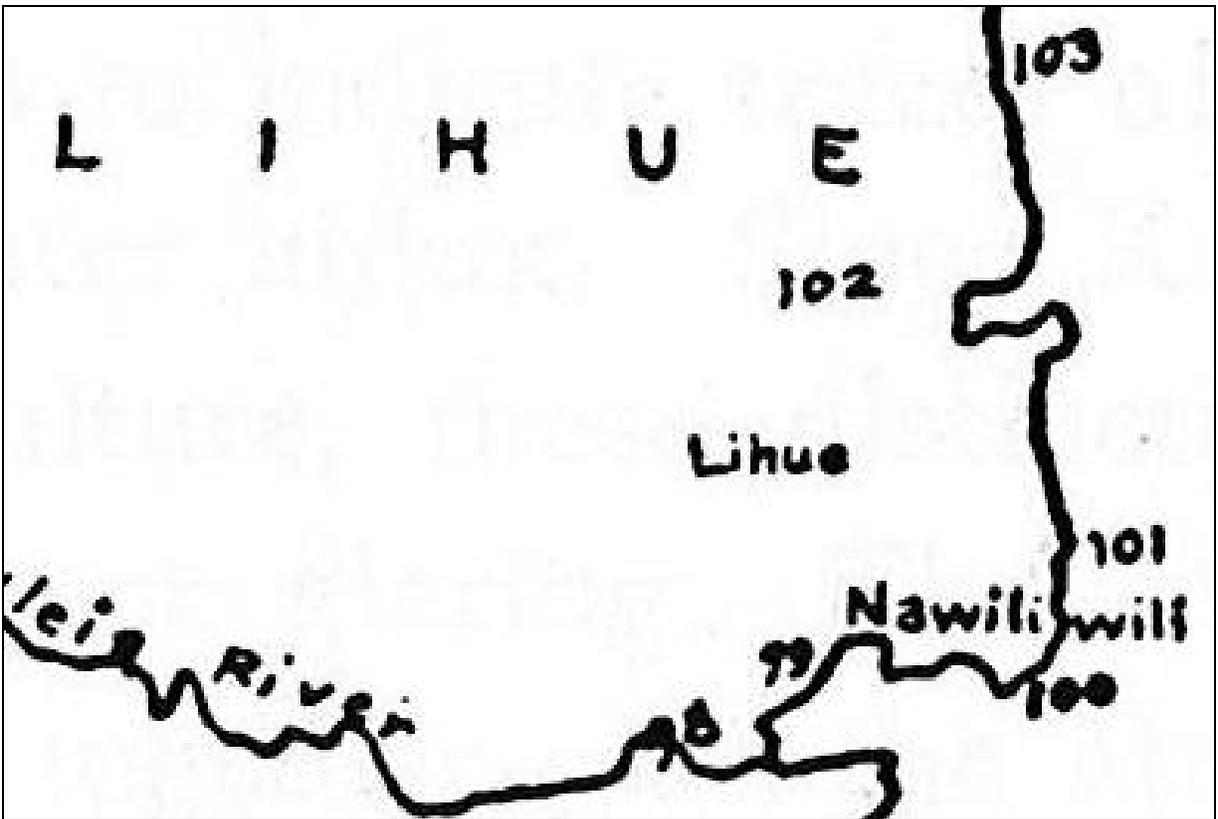


Figure 21. Detail of Bennett's (1931) map of Kaua'i showing location of archaeological sites

Table 3. Previous Archaeological Studies in and around the Project Area

Source	Location	Nature of Study	Findings
Thrum 1907	Island-wide	Almanac of Kaua'i	Listing of 5 <i>heiau</i> in the area
Bennett 1931	Island-wide	Archaeology of Kaua'i	Site 103. Dune burials. In the sand dunes that run along the shore halfway between Hanamā'ulu and Wailua River
Handy 1940	Island-wide	Reconnaissance of agricultural lands	Several sites identified
Hammatt 1988	Kalapakī	Archaeological Reconnaissance	Wall alignments, a terrace, and a midden scatter.
McMahon 1990	Līhu'e	Archaeological Fieldcheck	3 previously-identified historic residential sites (50-30-9390, -9401, -9402)
Rosendahl 1990	Kālepa Ridge	Archaeological Field Inspection	SIHP No. 50-30-11-1827, Burial platform (2+ individuals)
Walker & Rosendahl 1990	East of Kūhiō Hwy, NW of Hanamā'ulu Bay	Archaeological Inventory Survey	No significant findings
Folk & Hammatt 1991	Niumalu	Archaeological Survey and Subsurface Testing	2 previously recorded fishponds and 1 newly discovered <i>'auwai</i>
Walker et al. 1991	A study of 8 parcels most near Hanamā'ulu Bay	Archaeological Inventory Survey	Identifies 10 sites; 3 pre-contact, 7 historic. A subsurface cultural layer was located adjacent to the project area (SIHP No. 50-30-08-1838)
Walker & Rosendahl 1991	Hanamā'ulu	Archaeological Inventory Survey	Isolated coral fragments
Walker & Rosendahl 1991	Nāwiliwili	Archaeological Inventory Survey	34 intact historic burials and several historic headstones at Nāwiliwili Cemetery (SIHP No. 50-30-11-6008)
Hammatt and Creed 1993	Nāwiliwili	Archaeological Inventory Survey	3 <i>'auwai</i> (SIHP No. 50-30-11-491; 492; 493) and a single rock (50-30-11-494) thought to mark a burial.
Franklin & Walker 1994	7 parcels in Hanamā'ulu	Archaeological Inventory Survey	Summary of Walker & Rosendahl 1990 and Walker et al. 1991 (same project area)
Kaua'i Renovation & Development 1994 (Akana)	Kālepa Ridge	Monitoring Report	Revetment for Burial Site -746; additional bone fragments recovered

Source	Location	Nature of Study	Findings
Hammatt et al. 1994	Hanamā'ulu	Archaeological Document Review	Various archaeological features of the area, emphasizing the Wailua Heiau Complex (SIHP No. 50-30-08-502)
Hammatt & Folk 1995	Kalapakī	Archaeological and Osteological Study	69 historic burials at Nāwiliwili Cemetary (SIHP No. 50-30-11-6008)
Creed et al. 1999	Hanamā'ulu and Kalapakī	Archaeological Assessment	Historic remnants of Ahukini Landing (SIHP No. 50-30-08-9000)
Hammatt et al. 2002	Kūhiō Highway	Archaeological Study	Various archaeological features of the area, emphasizing the Wailua Heiau Complex (SIHP No. 50-30-08-502)
Hammatt & Shideler 2003	Kūhiō Highway	Archaeological Assessment	Various archaeological features of the area, emphasizing the Wailua Heiau Complex (SIHP No. 50-30-08-502)
Bell et al. 2006	Hanamā'ulu and Kalapakī	Archaeological Inventory Survey	Historic remnants of a piggery (SIHP No. 50-30-08-3958)

Table 4. Previously Recorded Sites in and around the Project Area

SIHP No.	Site Type	<i>Ahupua'a</i> Location and Reference
50-30-11-099	Kuhiau Heiau (A large paved <i>heiau</i> , whose enclosure covered an area of about four acres; long since destroyed)	Nāwiliwili; Thrum IN Bennett 1931:124
50-30-11-100	Ninini Heiau (near site of Nāwiliwili Harbor Light, double paved wall remnant)	Kalapakī; Bennett 1931:124
50-30-11-101	Ahukini Heiau (A <i>heiau</i> of medium size; foundations only now remain)	Hanamā'ulu; Thrum IN Bennett 1931:125
50-30-11-102	Kalauokamanu Heiau (A large walled <i>heiau</i> that stood above the present mill; destroyed about 1855- of <i>pō'okanaka</i> [human sacrifice <i>heiau</i>] class.)	Hanamā'ulu Thrum IN Bennett 1931:125
50-30-11-421	Midden Scatter of marine shells	Hanamā'ulu on shoreline; Hammatt 1990
50-30-11-422	Remnant/probable cattle wall	Hanamā'ulu on shoreline; Hammatt 1990
50-30-11-423	Remnant/probable cattle wall	Hanamā'ulu on shoreline; Hammatt 1990
50-30-11-424	Oval Terrace Alignment	Hanamā'ulu on shoreline;

SIHP No.	Site Type	<i>Ahupua'a</i> Location and Reference
		Hammatt 1990
50-30-11-503	Halehaka Japanese Cemetery	Kikuchi & Remoaldo 1992
50-30-08-621	Kapaia Chinese Cemetery	Hanamā'ulu; NE of airport Kikuchi & Remoaldo 1992
50-30-08-746	Kālepa Road Burial	Hanamā'ulu, on Kālepa Hill; Rosendahl 1990
50-30-11-818	Plantation Wall	West of Kapaia in Hanamā'ulu; Kikuchi 1992
50-30-11-1826	Halemanu Graves	Hanamā'ulu; on Kālepa Hill; Pers. comm. N. McMahon 1999
50-80-08-1827	Kālepa Burial Platform	Hanamā'ulu, on Kālepa Ridge; Pers. comm. N. McMahon 1999
50-80-08-1838	Pre-contact habitation deposit	Hanamā'ulu coast, north of bay
50-80-08-1839	Pre-contact agricultural wall and terrace	Hanamā'ulu coast, north of bay
50-30-11-1840	Historic Retaining Wall	Hanamā'ulu; Walker et al. 1991
50-30-11-1840	Historic Retaining Wall	Hanamā'ulu; Walker et al. 1991
50-30-11-1841	Historic Road	Hanamā'ulu; Walker et al. 1991
50-30-11-1842	Boundary/Agricultural Wall	South side of Hanamā'ulu Valley; Franklin & Walker 1994
50-30-11-1843	Historic Concrete Foundation, Road and Concrete Wall	Hanamā'ulu; Walker et al. 1991
50-30-11-1844	Historic Cemetery	Hanamā'ulu; Walker et al. 1991
50-30-11-1845	Historic Railroad Bridge	Hanamā'ulu; Walker et al. 1991
50-30-11-1846	Two concrete bridges	Hanamā'ulu coast; Walker et al. 1991
50-30-11-1847	Hanamā'ulu Valley	Hanamā'ulu; Walker et al. 1991
50-30-11-1999	Paukini Rock (in the ocean)	Kalapakī or Nāwiliwili Bay; Pers. comm. N. McMahon 1999
50-30-11-6009	Nāwiliwili Cemetery	Kalapakī near high school; Hammatt & Folk 1995

SIHP No.	Site Type	<i>Ahupua'a</i> Location and Reference
50-30-08-9000	Ahukini Landing	Hanamā'ulu Bay; Pers. comm. N. McMahon 1999
50-30-08-9402	Historic Building Remnant at Site of Radio Station KIVM	Off Radio Road near Ahukini Hwy; McMahon 1990; Franklin & Walker 1994
08-B008	Kaua'i Memorial Gardens	Kikuchi & Remoaldo 1992
08-B009	Hanamā'ulu Immaculate Conception Church Cemetery II, Roman Catholic	Kikuchi & Remoaldo 1992
08-B011	Immaculate Conception Church Cemetery, Kapaia	Kikuchi & Remoaldo 1992
08-B019	Family cemetery, not located, possibly connected to LCA 3653:2	Kikuchi & Remoaldo 1992
11-B001	Līhu'e Lutheran Church Cemetery	Kikuchi & Remoaldo 1992
11-B002	Japanese Cemetery, purported to have been moved	Kikuchi & Remoaldo 1992
11-B003	Līhu'e Lutheran Church Cemetery /Līhu'e Public Cemetery	Kikuchi & Remoaldo 1992
11-B004	Historic Cemetery near Nāwiliwili Park	Kikuchi & Remoaldo 1992

In addition to SIHP No. 103, which is located outside (north) of the general footprint area of the proposed project, several other sand-dune burials or grave sites have been noted in Hanamā'ulu; for example, at Kālepa (SIHP Nos. 50-30-08-746 and -1827), documented by Rosendahl (1990) and CSH archaeologist Kaipo Akana during a field survey of damage after Hurricane 'Iniki by the Kaua'i/Ni'ihau Island Burial Council in 1992.

Hammatt's (1990:11) archaeological reconnaissance of the Kaua'i Lagoons Resort identified a "...high well-constructed wall running 400' north of Ninini Lighthouse [as a] possible prehistoric wall and possibly related to the former Ninini Heiau (SIHP No. 100)." A dune midden scatter (SIHP No. 421), two probable cattle walls (SIHP Nos. 422 and 423), and an oval terrace alignment (SIHP No. 424) were also recorded.

Bennett places Ahukini heiau (SIHP No. 101) "in Kalapaki, near Ahukini Point on the bluff overlooking the sea. This is now entirely destroyed" (Bennett 1931:125).

Bennett (1931:152) lists Pohakoele'ele Heiau in Kalapakī under "Kauai sites not located." Damon probably would have mentioned its location if she had known about it. There do not seem to be other references to Pohakoele'ele Heiau in Kalapakī, and it is unknown if Damon used Thrum for her source, or if she knew the information from persons on Kaua'i. Although Bennett could not verify its existence, and its location is speculative, it is included as a non-located site of pre-contact Kalapakī, passed down in local memory. There was a *heiau* in the neighboring (north) *ahupua'a* of Wailua called Pōhaku'ele'ele, said to have been located just *mauka* of the junction of 'Ōpaeka'a Stream and the Wailua River (Dickey 1917:29). It is possible that these two *heiau* are the same, and Thrum was confused on the location. It is also possible

that this was the name of an unnamed *heiau* on Kūki'i Point. Neither Thrum nor Bennett mention a *heiau* noted by Lt. George G. Jackson, Navy surveyor for the Hawaii Government Survey Office in 1881 (Figure 7) at Kūki'i Point. The Kaua'i Community College newsletter, *Archaeology on Kaua'i* (1973:4), notes that the "remains of ancient heiau" noted by Jackson are "where the cottages of the Kauai Surf now stand."

Ethel Damon (1931) mentions Kuhiau Heiau in Nāwiliwili, placing it near the location of the Court House (Figure 8). She mentions Pohako-ele'ele, location unknown, and Paukini Rock (SIHP No. 1999), located at Kalapakī Beach, Nāwiliwili Bay:

An additional area of four acres was during this same year, 1851, sold to the government for harbor and road near Nawilwili Bay. The first sighting point in this deed was the north corner of Kuhiau heiau. (Damon 1931:415)

From the deck of their rivercraft in 1854 Mrs. Rice and the children could plainly see above the rocky shore the ruins of Kuhiau, the old heiau, or temple, and nearby on the bluff the flaming blossoms of a great wili-wili tree among koa trees which then grew almost down to the water's edge. (Damon 1931:17)

On the bluff overlooking the bay of Nawiliwili, where the public High School now stands, was once the large paved heiau called Kuhiau, extending over about four acres of ground. It was in its day the largest and most far-famed temple on the island. Below it, in the bay, is still the rock called Paukini, which was said to be its companion or sister heiau, and was probably also the home of the kahuna, or priest, of Kuhiau. In ancient times this rock was connected with the shore near the site of the former boat landing. All the dredging and filling in for the modern wharves have not yet touched this old rock of Paukini, the sole remnant of the famous heiaus of Nawiliwili Bay. For almost no traces, even of the great Kuhiau temple, are now [in 1931] to be found; and of the three small heiaus in the neighboring ahupuaa of Kalapaki, those of Ninini, Ahukini and Pohako-eleele, little more than the names survive. (Damon 1931:397-398)

In a collection of Kaua'i Place names (Kelsey n.d.), the *heiau* of Kuhiau is also mentioned:

Nawiliwili, oia ke awa kumoku. Aia ilaila ka heiau of Kuhiau. Kalapaki, aia oia makao o Nawiliwili.

Nawiliwili is the harbor. The temple of Kuhiau is there. Kalapaki is on the shoreline of Nawiliwili.

Thrum placed the location of Kuhiau Heiau near the "Court House," which is labeled on a 1881 Jackson map (Figure 7) in an area called "Kuhiau." Jackson does not label any structure as the *heiau*, so it may have been destroyed sometime between 1854, when Mrs. Rice and her children saw it from the harbor, and 1881, when Jackson made his map. According to Dr. William Kikuchi (personal communication), the *heiau* was destroyed when people took the rocks to use for other purposes. Its general location was near the ironwood tree next to the Kaua'i High School flagpole (Kalima and Wong-Smith 1991:B-5). Nancy McMahon (SHPD Archaeologist for Kaua'i) indicated that the Paukini Rock location in Kalapakī Bay was shown to her by Cheryl Lovell-Obatake in 1999, and subsequently added to the State Inventory of Historic Properties (SIHP No. 1999).

3.8.3 More Recent Archaeological Projects

The following archaeological projects studied lands located within the general footprint area of the proposed project. Most of these investigations yielded no significant historic or cultural sites, or relatively minimal finds:

- (1) McMahon (1990) conducted a brief walk-through field check of three parcels of land immediately west of the airport, and east of Līhu'e town center. Three previously identified historic residences (SIHP Nos. 50-30-9390, -9401 and -9402) were documented; no archaeological resources were identified.
- (2) Hammatt and Creed (1993) conducted an archaeological survey of 61 acres of land in Nāwiliwili. Historical evidence suggested this land was intensively used for agriculture in both pre- and post-contact times. They documented three 'auwai (traditional irrigation ditches) (SIHP Nos. 50-30-11-491; -492 and -493); and a single rock (SIHP 50-30-11-494) interpreted as a burial marker.
- (3) Franklin and Walker's (1994) archaeological inventory survey of 552.3 acres including portions of the airport showed that nearly the entire area was previously disturbed and most sites obliterated. Two sites were documented: a stone wall (SIHP No. -1842) interpreted as a historic boundary marker (possibly marking off an old agricultural field), along the south side of Hanamā'ulu Valley near Kapaia; and a historic structure (SIHP No. -9402) associated with Radio Station KIVM located in the Kalapakī portion of the airport.
- (4) Hammatt and Folk (1995) conducted an archaeological and osteological study of Nāwiliwili Cemetery (SIHP No. 50-30-11-6009), located between Kaua'i High School and Kalapakī Bay. A total of 68 burials of historic age were documented, disinterred, and reburied nearby; the burials represent a wide variety of ethnicities and ages. Walker and Rosendahl (1991) surveyed this same general area and discovered 34 intact, historic burials with several associated headstones.
- (5) Creed et al.'s (1999) archaeological inventory survey of several discontinuous parcels within the airport area documented no evidence of prehistoric or early historic sites. However, extensive remains of Ahukini Camp (part of Ahukini Landing, SIHP 50-30-08-9000) were documented at Hanamā'ulu Bay. The remains consisted of 15 concrete slabs believed to have been associated with residential structures, concrete drainage systems remnants, piles of historic trash, railroad tracks, loading dock and camp-related infrastructure. Additionally, a large wooden house (the Bertrand House) with attached garage/living area and an associated rock wall lie within the project area, adjacent to and south of Ahukini Landing.
- (6) Bell et al.'s (2006) archaeological inventory survey of approximately 175 acres of discontinuous lands in Hanamā'ulu and Kalapakī Ahupua'a associated with proposed improvements to Līhu'e Airport identified one historic property (SIHP 50-30-08-3958), a piggery dating from the plantation era. This site is located approximately 150 meters (490 feet) east of the proposed alignment (Figure 19).

Just north of the subject project area, Walker and Rosendahl (1990) excavated nine backhoe trenches in association with the Hanamā'ulu Affordable Housing Project from which only

“several small isolated coral fragments” were found. No further archaeological work was recommended at this location (TMK: (4) 3-7-003: portion 020), which was determined to have been entirely disturbed to a significant depth below surface by historic sugar cane operations. Walker et al.’s (1991) archaeological inventory survey near the mouth of the Hanamā‘ulu Stream identified 10 sites; three of these date from pre-contact times: a subsurface cultural deposit associated with a traditional living site area (SIHP No. 1838 A & B), an agricultural wall and terrace of unknown function (SIHP No. 1839 A & B), and a terraced river valley of some 50 acres (SIHP No. 1847). SIHP No. 1839 provided a radiocarbon date of 1170-1400 A.D. Other sites documented by Walker et al. (1991) north of the subject project area include plantation-era structures, and a historic cemetery (SIHP No. 1844 Japanese-Buddhist and Filipino-Catholic cemetery).

Just south of the subject project area, in Niumalu, Folk and Hammatt’s (1991) archaeological inventory survey at the Kanoa Estate Lands documented two fishponds originally recorded by Ching et al. (1973). In addition, a previously unrecorded ‘*auwai* was found connected to one of these fishponds, known as Kanoa’s fishpond, to Hūle‘ia Stream.

Kikuchi and Remoaldo’s *Cemeteries of Kauai* (1992) notes eight cemeteries in Hanamā‘ulu and Kalapakī. Descriptions do not exist for two of them (B019, B004). A pre-contact burial platform on Kālepa Ridge was found by Kaipō Akana in 1992 in an inspection of areas damaged by Hurricane ‘Iniki. These burial sites are not located within the subject project area.

3.8.4 Coastal Portions of Hanamā‘ulu and Kalapakī Ahupua‘a

A total of four previous studies have looked at portions of the seashore at Kalapakī Ahupua‘a and Hanamā‘ulu Ahupua‘a (south of the Hanamā‘ulu Stream), which constitute the most sensitive archaeological portions of the general footprint area of the proposed project.

Hammatt’s (1988, 1990) archaeological reconnaissance and survey of this coastal area documented five sites, including two dry-stacked stone walls (both incomplete remnants) dating from the historic era (SIHP Nos. 50-30-11-422 and 423, shown in Figure 22 as “Site 1” and “Site 2,” respectively), a cultural layer (midden scatter) along the wave-cut shoreline (SIHP No. 50-30-11-424, shown in Figure 22 as “Site 3”), an oval-shaped dry-stacked stone alignment or terrace (SIHP No. 50-30-11-421, shown in Figure 22 as “Site 4”), and a 400-foot long stone wall considered historic but noted that remnants of Ninini Heiau could have been used in the wall construction (SIHP No. 50-30-11-100, shown in Figure 22 as “Site 5”) (Figure 22). Hammatt noted that much of the area had been heavily disturbed by prior activities, and that no definitive traces of Ahukini Heiau (SIHP No. 101) could be found.

Creed et al.’s (1999) archaeological inventory survey of several discontinuous parcels within the airport area included portions of the coast at Hanamā‘ulu (south of the stream, but documented no evidence of prehistoric or early historic sites, but did find extensive ruins of the early 20th century port of Ahukini (see Figure 19).

As stated above, Bell et al. (2006) documented one historic property (SIHP 50-30-08-3958), a piggery dating from the plantation era. This site is located approximately 150 meters (490 feet) east of the proposed alignment (see Figure 19).

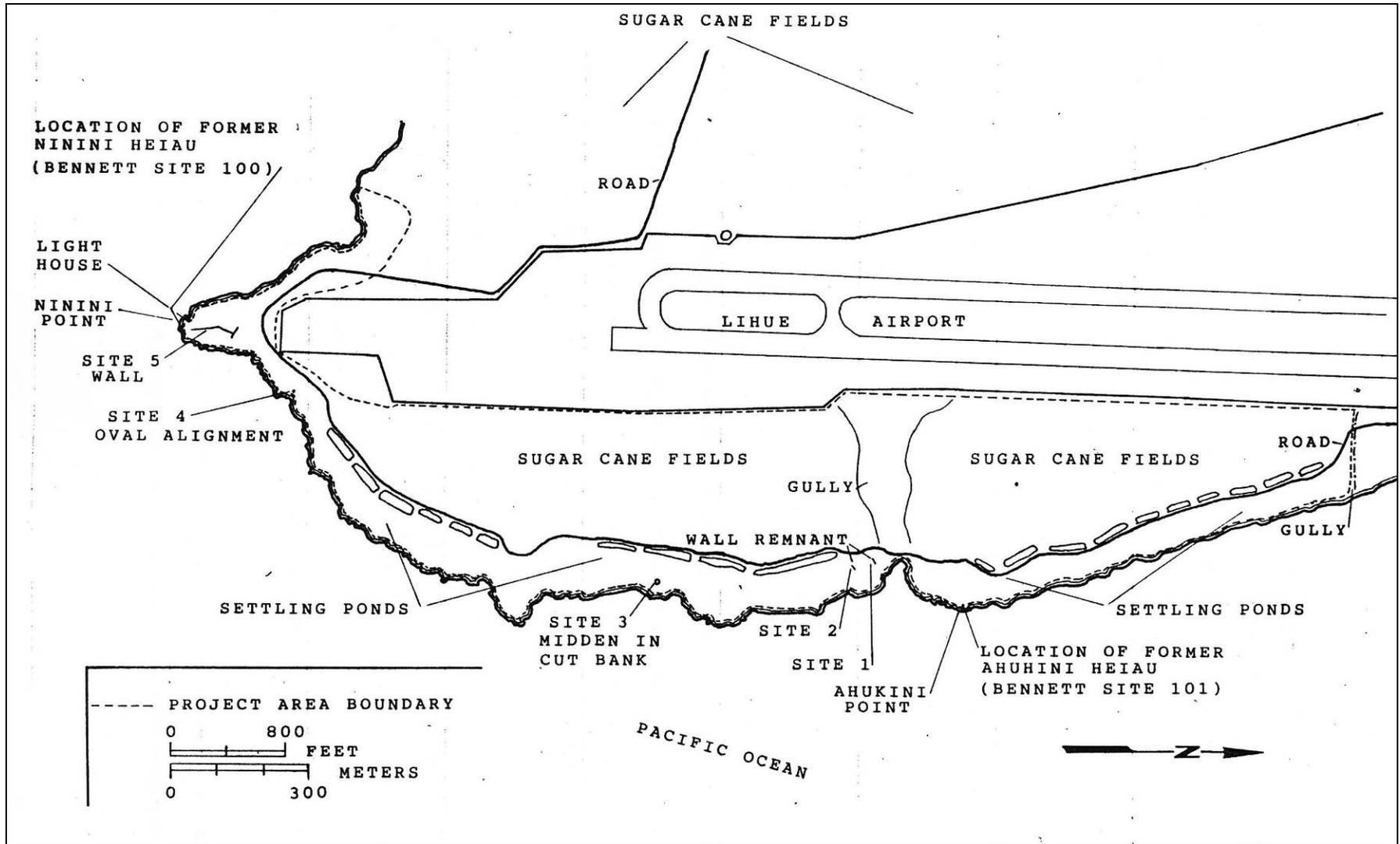


Figure 22. Archaeological sites along the coast at Kalapakī documented by Hammatt (1988, 1990)

3.9 Background Summary and Predictive Model

3.9.1 Background Summary

The project area is located between the two main bays and streams of Nāwiliwili and Hanamā'ulu. These two streams, which drain the slopes of Kilohana, were once home to thousands of native Hawaiians living a traditional subsistence lifestyle. The *ahupua'a* of Hanamā'ulu, Kalapakī and Nāwiliwili were permanently inhabited and intensively used in pre-contact times, based on a large amount of archaeological, historical, and oral-historical documentation. The coastal areas were the locus of permanent house sites and temporary shelters, *heiau*, including *ko'a* and *kū'ula*, and numerous trails. There were fishponds at Kalapakī and Nāwiliwili. Before the historic era, there were villages at Kalapakī, Nāwiliwili, and the mouth of the Hanamā'ulu Stream. The upland areas of these *ahupua'a* contained native forests and were cultivated with crops of *wauke* (paper mulberry, *Broussonetia papyrifera*), *'uala* (sweet potatoes, *Ipomoea batatas*), and *ipu* (bottle gourd). Legends and historic documentation elaborate on many of these important natural resources. The archaeological record of the Līhu'e District indicates a date range of circa A.D. 1100 to 1650 for pre-contact Hawaiian habitations (Walker et al. 1991).

Early historic accounts of the area are limited to travelers, missionaries, and survey expeditions. They describe this side of Kaua'i as having good land that is mostly unoccupied with lots of grass, trees, and streams (Damon 1931). Whaling and sandalwood were shortlived commercial enterprises, and part of a transitional period to a cash crop economy. Missionaries settled in Līhu'e in the 1840s and built the first infrastructure of the area, consisting of schools and churches. Cash crops were attempted in the form of cotton, which proved unsuccessful. The missionaries also tried to move the local inhabitants of the shore to higher, more fertile agricultural lands. The first commercial agriculture was attempted in the late 1830s by Governor Kaikio'ewa, but was not consistent or successful until after the *Māhele* of the 1850s.

The middle 19th century brought the *Māhele*, and commercial sugar cane agriculture, which firmly established Līhu'e's place in state and global economic markets. In 1870, the Lihue Plantation Company bought approximately 17,000 acres of undeveloped land in Hanamā'ulu, which were then used to grow sugar cane and to capture and deliver water to both plantations. Later, in 1870, George N. Wilcox started the first sugar cane plantation in Hanamā'ulu, the Hanamaulu Plantation (Dorrance and Morgan 2000). In 1898, Hanamaulu Plantation was merged into Lihue Plantation. Commercial sugar cane agriculture continued in Līhu'e until 2000, when it and the Kekaha Sugar Co. were permanently shut down. The nearby Kipu Plantation, founded in 1907, operated until 1942 (Dorrance and Morgan 2000).

The beginning of the 20th century brought big changes as Nāwiliwili Harbor was proposed as a deep water harbor for the island of Kaua'i. The harbor was dredged and the dredge material was used to fill in the wharf areas. A breakwater was also constructed in the harbor and was completed after much debate in the legislature. The Nāwiliwili Harbor Light was also upgraded during this time. Nāwiliwili harbor was utilized by the sugar plantations; however, it was not until after a tidal wave devastated Ahukini Landing in the late 1940s that Nāwiliwili Harbor was used almost exclusively for sugar cane and other commercial transport. Līhu'e airport was opened outside of Līhu'e town in 1949, further extending transportation options for local residents. The

airport sits on approximately 850 acres of former sugarcane fields. The addition of the airport brought an increase in tourist traffic to Kaua'i which has had a major economic impact to the island. The airport has been continually upgraded through the years and continues to serve as Kaua'i's only public airport.

Thrum and Bennett conducted the first island wide archaeological surveys in the early part of the 20th century. The early surveys of this area of Kaua'i documented a number of *heiau* which, at the time of survey, were only remnants or already destroyed (Thrum 1907). Other types of sites observed during these early surveys include dune burials and Paukini Rock, which is now under water in Nāwiliwili Bay. Most of the previous archaeological work in and around the project area has been conducted only within the last 30 years. Later research of the area documented pre-contact habitation sites and activity areas, additional burials, and infrastructure related to the plantation era. Of particular note to the current project are the CSH surveys of 1988 and 1990 which covered approximately 50% of the current project area (Hammatt 1988 and 1990). The survey documented five sites related to prehistoric activity and plantation era infrastructure. A CSH survey conducted in 1998 reported structures related to Ahukini Landing and portions of this survey also fall within the current project area (Creed et al. 1999). The CSH survey of 2006 also covered a small portion of the current project area near Ahukini Landing (Bell et al. 2006). The survey documented one site, a historic piggery, which is located approximately 150 m east of the current project alignment.

3.9.2 Predictive Model

Prior to the extensive land alteration caused by over a century of commercial agricultural activities, portions of the project area would likely have contained historic properties related to habitation and coastal resource exploitation. These historic properties would have included both permanent and temporary habitation terraces, activity areas, and burial mounds. Subsurface pre-contact cultural deposits within the project area may consist of midden, artifact scatters, and possible human remains. Remnants of post-contact agricultural infrastructure are also likely to exist within the project area and may include terraces, historic artifact scatters, and water control features. Other historic infrastructure, including the remains of single family residences and commercial structures, may be present and there is also a possibility of encountering WWII-era military infrastructure. Previously identified historic properties within the current project area consist of pre-contact habitation remnants and historic infrastructure related to commercial agriculture and ranching activities.